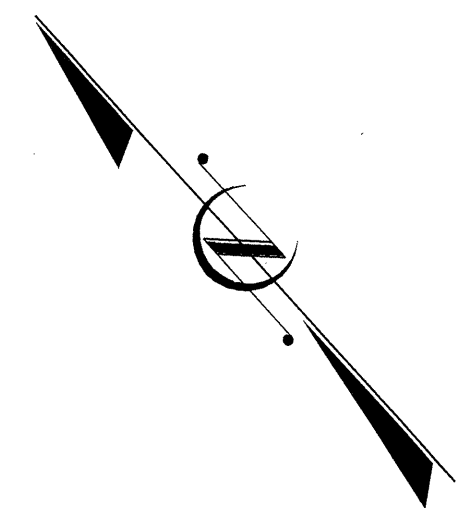
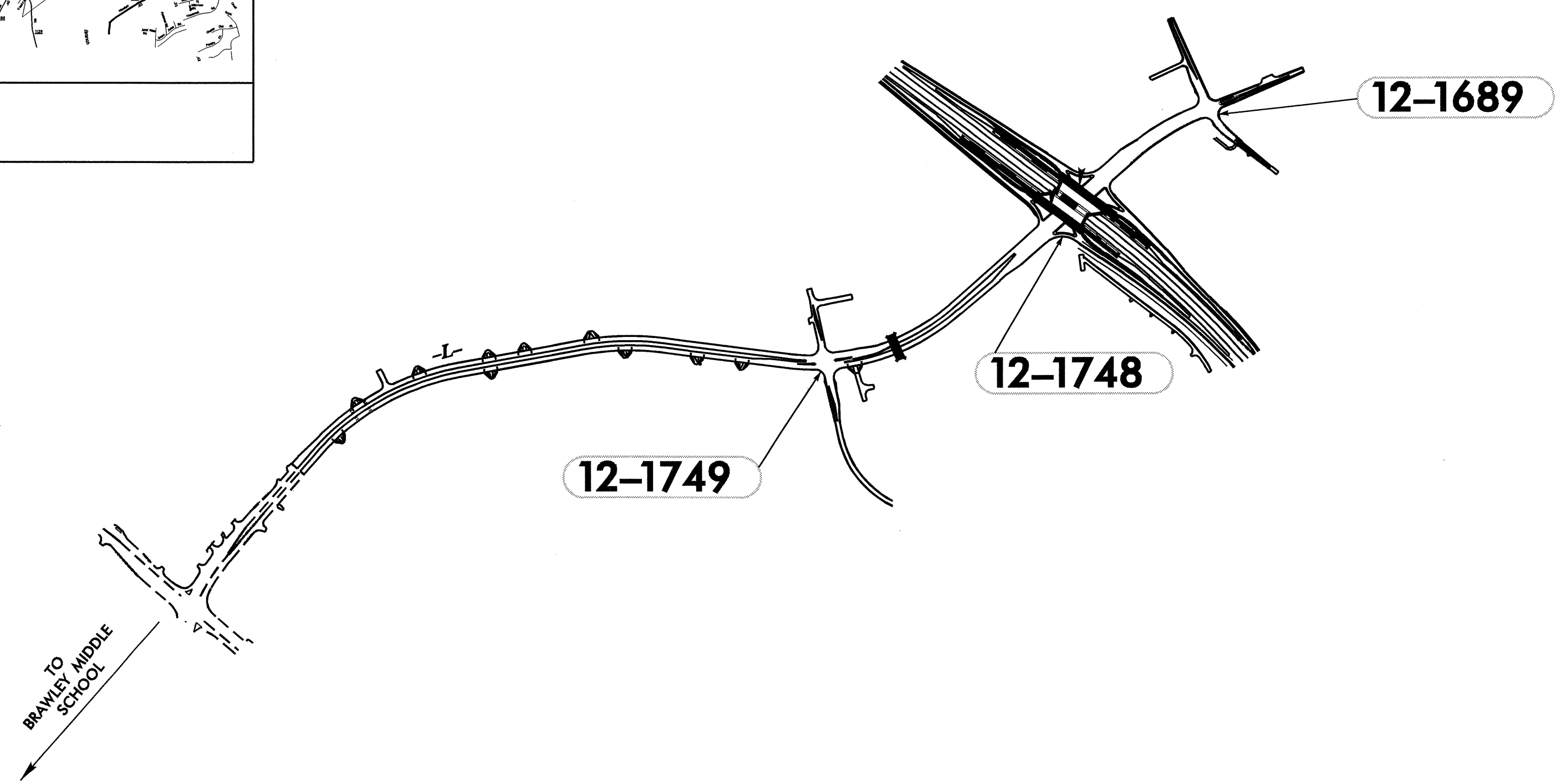
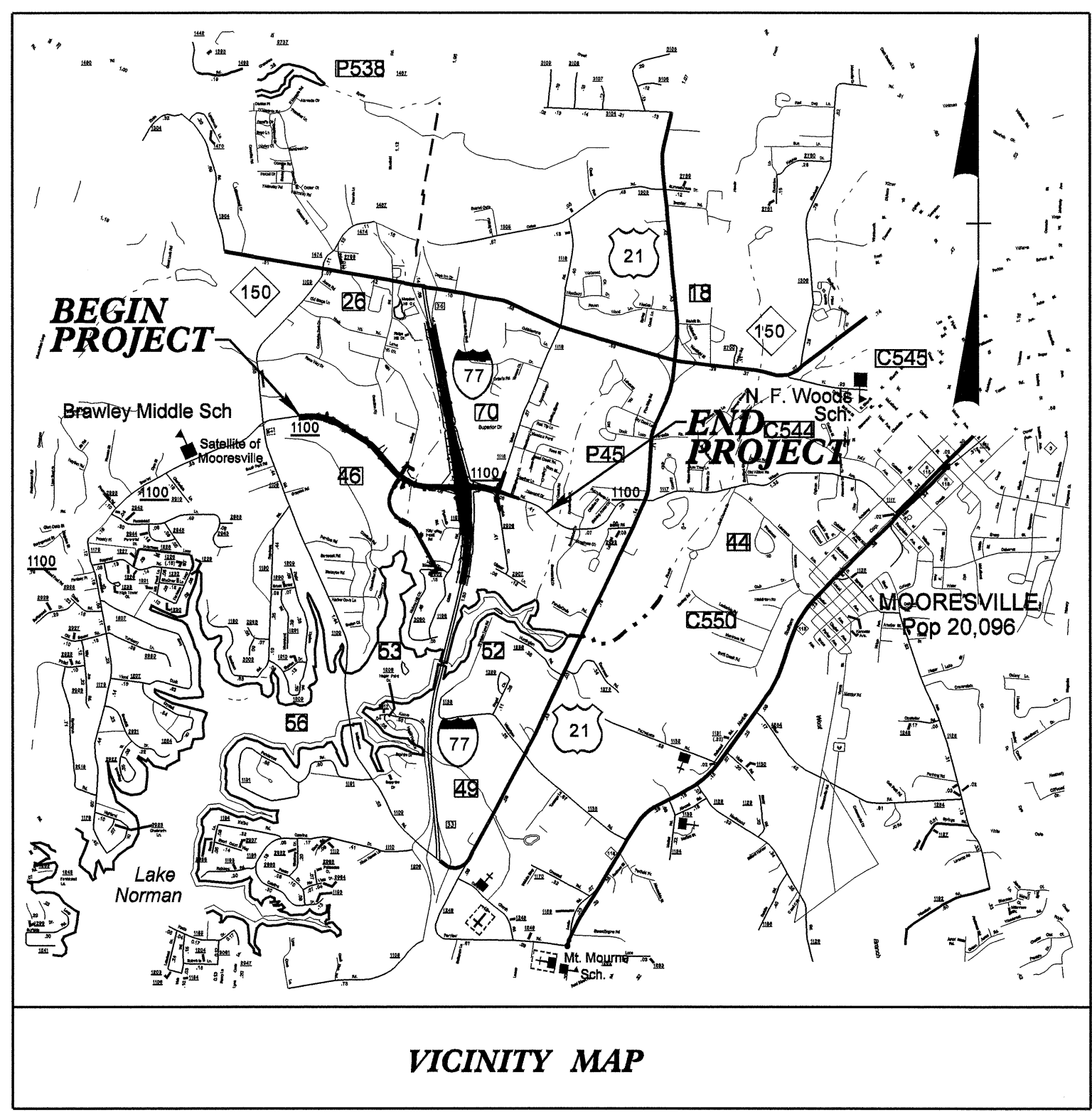


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**IREDELL COUNTY**

**LOCATION:** SR 1100 (BRAWLEY SCHOOL ROAD) FROM EAST OF SR 1109 (WILLIAMSON ROAD) TO EAST OF WINGHAVEN COURT  
**TYPE OF WORK:** TRAFFIC SIGNALS & COMMUNICATIONS CABLE ROUTING PLANS

**TIP PROJECT: R-3833B**



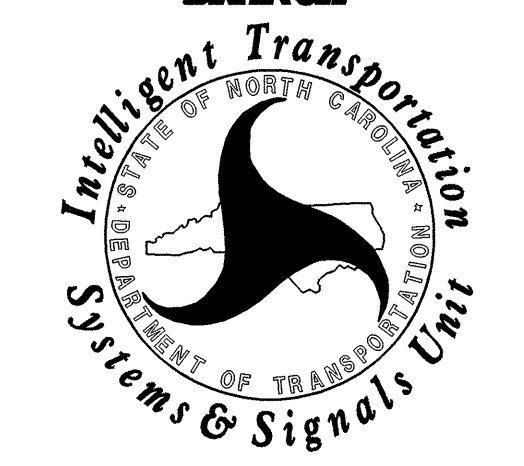
Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.

Sheet #	Reference #	Index of Plans	Location/Description
Sig. 1		Title Sheet	SR 1100 (Brawley School Rd.) at Rolling Hills Rd. / Gibbs Rd.
Sig. 2-6	12-1749		SR 1100 (Brawley School Rd.) at I-77 Ramps A,B,C, & D
Sig. 7-12	12-1748		SR 1100 (Brawley School Rd.) at SR 1116 (Talbert Rd.) / SR 2906 (Sunfish Dr.)
Sig. 13-19	12-1689		Standard & Custom Drawings for Metal Poles
Sig. 20-25	N/A		Communications Cable Routing Details
Sig. 26-32	N/A		Inductive Detection Loops Details
Sig. 33-35	N/A		

**INTELLIGENT TRANSPORTATION AND SIGNALS UNIT**  
Contacts:

**T. J. Williams, PE** - Signals and Geometrics Contracts Engineer  
**J.T. Rowe, Jr., PE** - Signal Equipment Design Engineer  
**G. G. Murr, Jr., PE** - Intelligent Transportation Systems Engineer

Prepared In the Office of:  
**DIVISION OF HIGHWAYS**  
**TRAFFIC ENGINEERING AND SAFETY SYSTEMS BRANCH**



24-NOV-2008 09:58 c:\documents and settings\murray\local settings\temporary internet files\olk3cb\traffic titlesheet.sig\_dsm\_2008mmd.dgn







## LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5 AND 6.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

LOGICAL I/O COMMAND #1 (+/-COMMAND#)  
IF ACTIVE PHASE #1 IS ON  
AND RED CLEAR ON PHASE #1 IS ON

↓  
SCROLL DOWN

THEN:  
SET OUTPUT ASSIGNMENT #50 ON  
SET OUTPUT ASSIGNMENT #51 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

LOGICAL I/O COMMAND #2 (+/-COMMAND#)  
IF ACTIVE PHASE #1 IS ON

↓  
SCROLL DOWN

THEN:  
SET OUTPUT ASSIGNMENT #52 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

LOGICAL I/O COMMAND #3 (+/-COMMAND#)  
IF YELLOW ON PHASE #1 IS ON

↓  
SCROLL DOWN

THEN:  
SET OUTPUT ASSIGNMENT #51 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

LOGICAL I/O COMMAND #4 (+/-COMMAND#)  
IF ACTIVE PHASE #5 IS ON  
AND RED CLEAR ON PHASE #5 IS ON

↓  
SCROLL DOWN

THEN:  
SET OUTPUT ASSIGNMENT #42 ON  
SET OUTPUT ASSIGNMENT #43 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

LOGICAL I/O COMMAND #5 (+/-COMMAND#)  
IF ACTIVE PHASE #5 IS ON

↓  
SCROLL DOWN

THEN:  
SET OUTPUT ASSIGNMENT #44 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

LOGICAL I/O COMMAND #6 (+/-COMMAND#)  
IF YELLOW ON PHASE #5 IS ON

↓  
SCROLL DOWN

THEN:  
SET OUTPUT ASSIGNMENT #43 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE	
OUTPUT 42	= Overlap C Red
OUTPUT 43	= Overlap C Yellow
OUTPUT 44	= Overlap C Green
OUTPUT 50	= Overlap A Red
OUTPUT 51	= Overlap A Yellow
OUTPUT 52	= Overlap A Green

## OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

PAGE 1: VEHICLE OVERLAP 'A' SETTINGS  
PHASE: :12345678910111213141516  
VEH OVL PARENTS: :XX  
VEH OVL NOT VEH: :  
VEH OVL NOT PED: :  
VEH OVL GRN EXT: :  
STARTUP COLOR: - RED - YELLOW - GREEN  
FLASH COLORS: - RED - YELLOW X GREEN

PRESS '+' TWICE

← NOTICE GREEN FLASH

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS  
PHASE: :12345678910111213141516  
VEH OVL PARENTS: : XX  
VEH OVL NOT VEH: :  
VEH OVL NOT PED: :  
VEH OVL GRN EXT: :  
STARTUP COLOR: - RED - YELLOW - GREEN  
FLASH COLORS: - RED - YELLOW X GREEN

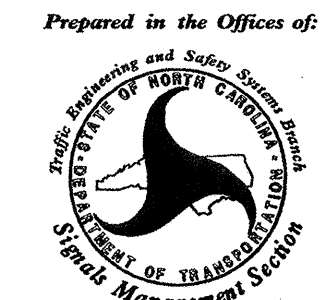
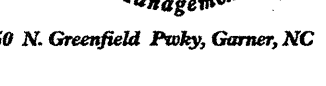
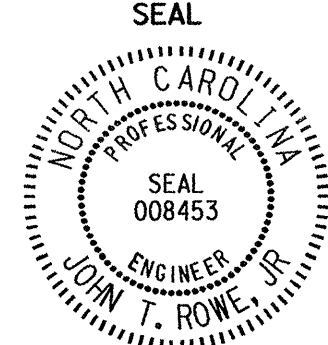
PRESS '+' TWICE

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 12-1749  
DESIGNED: September 2008  
SEALED: 10-30-08  
REVISED: N/A

New Installation - Sheet 2 of 4

 Prepared in the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	<b>SR 1100 (Brawley School Road)</b> at <b>Rolling Hills Road / Gibbs Road</b>		SEAL  SEAL 008453 JOHN T. ROWE, JR. ENGINEER
	Division 12      Iredell County      Mooresville		SIGNATURE: <i>John T. Rowe</i> DATE: 11-3-08
PLAN DATE: October 2008      REVIEWED BY: JTR	PREPARED BY: James Peterson      REVIEWED BY:		SIG. INVENTORY NO. 12-1749

31-OCT-2008 11:18 and bawley\jtr\poules\g\_m\project\scm\21749\_sme.ele.xxv.dgn JTP:JPSON



PPLT SIGNAL OUTPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL

(program controller as shown below)

OUTPUT ASSIGNMENTS FOR SIGNAL HEAD 51

NOTE: THIS PROGRAMMING APPLIES FOR OUTPUT PAGE 2 ONLY, OUTPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR ALTERNATE PHASING OPERATION.

OUTPUT ASSIGNMENTS FOR SIGNAL HEAD 11

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). PRESS 'NEXT' FOR PAGE 2, WITH CURSOR IN "OUTPUT ASSIGNMENT#" POSITION ENTER "42"

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE PHASE' AS SHOWN BELOW.

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). PRESS 'NEXT' FOR PAGE 2, WITH CURSOR IN "OUTPUT ASSIGNMENT#" POSITION ENTER "50"

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE PHASE' AS SHOWN BELOW.

STEP 1

```
PAGE:2 C1 PIN:88 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....42
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
```

ENTER A "Y" FOR VEHICLE PHASE.  
THE OUTPUT IS SET AS AN OVERLAP BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.

```
PAGE:2 C1 PIN:88 VEHICLE OVERLAP
SELECT VEHICLE PHASE (1-16).....5
SELECT COLOR(0=RED,1=YEL,2=GRN).....0
```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE PHASE' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.  
PRESS THE 'ENT' KEY AFTER INPUTING DATA, THEN 'ESC'.

```
PAGE:2 C1 PIN:88 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....42
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
```

STEP 4

```
PAGE:2 C1 PIN:97 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....50
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
```

ENTER A "Y" FOR VEHICLE PHASE.  
THE OUTPUT IS SET AS AN OVERLAP BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.

```
PAGE:2 C1 PIN:97 VEHICLE OVERLAP
SELECT VEHICLE PHASE (1-16).....1
SELECT COLOR(0=RED,1=YEL,2=GRN).....0
```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE PHASE' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.  
PRESS THE 'ENT' KEY AFTER INPUTING DATA, THEN 'ESC'.

```
PAGE:2 C1 PIN:97 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....50
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
```

STEP 2

```
PAGE:2 C1 PIN:89 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....43
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
```

ENTER A "Y" FOR VEHICLE PHASE.  
THE OUTPUT IS SET AS AN OVERLAP BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.

```
PAGE:2 C1 PIN:89 VEHICLE OVERLAP
SELECT VEHICLE PHASE (1-16).....5
SELECT COLOR(0=RED,1=YEL,2=GRN).....1
```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE PHASE' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.  
PRESS THE 'ENT' KEY AFTER INPUTING DATA, THEN 'ESC'.

```
PAGE:2 C1 PIN:89 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....43
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
```

STEP 5

```
PAGE:2 C1 PIN:98 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....51
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
```

ENTER A "Y" FOR VEHICLE PHASE.  
THE OUTPUT IS SET AS AN OVERLAP BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.

```
PAGE:2 C1 PIN:98 VEHICLE OVERLAP
SELECT VEHICLE PHASE (1-16).....1
SELECT COLOR(0=RED,1=YEL,2=GRN).....1
```

WHEN A 'Y' IS ENTERED FOR 'VEHICLE PHASE' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.  
PRESS THE 'ENT' KEY AFTER INPUTING DATA, THEN 'ESC'.

```
PAGE:2 C1 PIN:98 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....51
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
```

STEP 3

```
PAGE:2 C1 PIN:90 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....44
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
```

ENTER A "Y" FOR NOT ENABLED (THIS WILL DISABLE THE OUTPUT)  
THE OUTPUT IS SET AS AN OVERLAP BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.

```
PAGE:2 C1 PIN:90 NOT ENABLED
OUTPUT ASSIGNMENT #.....44
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
```

STEP 6

```
PAGE:2 C1 PIN:99 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....52
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
```

ENTER A "Y" FOR NOT ENABLED (THIS WILL DISABLE THE OUTPUT)  
THE OUTPUT IS SET AS AN OVERLAP BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.

```
PAGE:2 C1 PIN:99 NOT ENABLED
OUTPUT ASSIGNMENT #.....52
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
```

New Installation - Sheet 3 of 4

OUTPUT PROGRAMMING COMPLETE

NOTE: THE OUTPUT ASSIGNMENT CHANGES, SHOWN ABOVE, ARE NECESSARY FOR THE TIME OF DAY OPERATION OF SIGNAL HEADS 11 AND 51. IN ALTERNATE PHASING (PROTECTED ONLY) OPERATION, THE RED ARROW CONTROL IS SWITCHED TO THE LEFT TURN PHASE RED. THE SOLID YELLOW ARROW CONTROL IS SWITCHED TO THE LEFT TURN PHASE YELLOW. IN ADDITION, THE FLASHING YELLOW ARROW IS SWITCHED OFF BY DISABLING THE OVERLAP GREEN OUTPUT.  
ALL OF THESE OUTPUT CHANGES ARE ACCOMPLISHED ON OUTPUT PAGE 2. THEREFORE IN ALTERNATE PHASING (PROTECTED ONLY) MODE, THE PAGE IS SWITCHED TO "2" BY THE CONTROLLER TOD EVENT SCHEDULING.  
IN NORMAL PHASING (PPLT) MODE THE STANDARD, DEFAULT, OUPUT ASSIGNMENTS ARE USED WHICH ARE DESIGNATED ON OUTPUT PAGE 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 12-1749  
DESIGNED: September 2008  
SEALED: 10-30-08  
REVISED: N/A

ELECTRICAL AND PROGRAMMING DETAILS FOR: SR 1100 (Brawley School Road) at Rolling Hills Road / Gibbs Road

Prepared in the Office of: [Seal]

Division 12 Iredell County Mooresville

PLAN DATE: September 2008 REVIEWED BY: JTR

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS: [Table]

750 N. Greenfield Pkwy, Garner, NC 27529

[Seal]

John T. Rowe 11-3-08

SIG. INVENTORY NO. 12-1749

31-OCT-2008 11:16 C:\ppl\work\groups\sig\mnp\ppl\sig\sig\121749\_sml\_01\_xxx.dgn



**TOD EVENT SCHEDULING PROGRAMMING DETAIL**  
**TO CALL ALTERNATE PHASING OPERATION**  
*(program controller as shown below)*

\* DENOTES TO BE DETERMINED BY THE DIVISION TRAFFIC ENGINEER.

ALL EVENTS SHOWN BELOW SHALL BE PROGRAMMED TO START AND STOP ON THE SAME TIMES AND DATES.

FROM MAIN MENU PRESS 'B' (SCHEDULING).

NOTE THAT THE TOP LINE WILL CHANGE FROM "NOT ASSIGNED" TO SPECIFIED FUNCTION WHEN EVENT IS ASSIGNED AS SHOWN.

```

SCHEDULED EVENT #1 OUTPUT PAGE CHANGE
START DATE (MM/DD).....**/**
END DATE (MM/DD).....**/**
START TIME (HH:MM).....**:**
STOP TIME (HH:MM).....**:**
DOW 1SUN MON TUE WED THR FRI SAT
ENABLED 1 * * * * *
EVENT GROUPS |12345678910111213141516
ASSIGNED

DELETE EVENT WHEN COMPLETED?.....N
CONTINUOUS EVENT?.....N
INVERT EVENT?.....N
SELECT 1 EVENT TYPE:
EVENT GROUP (1-16).....
PLAN (65=FLSH,66=FREE)..... OFFSET#...
PLAN PRIORITY: LOW... MED... HIGH...
CHANGE PHASE SEQUENCE PAGE (1-12)....
CHANGE PHASE TIMING PAGE (1-4).....
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)....
CHANGE INPUT PAGE (1-4).....
CHANGE OUTPUT PAGE (1-4).....2
SET OUTPUT ON (1-64).....
SET OUTPUT OFF (1-64).....
SET INPUT ON (1-64).....
SET INPUT OFF (1-64).....
ENABLE FAILURES LOG?.....
ENABLE EVENTS LOG?.....
ENABLE DATA ENTRIES LOG?.....
ENABLE COORDINATION PLANS LOG?.....
ENABLE SPECIAL FUNCTIONS LOG?.....
ENABLE SLIT MONITOR LOG?.....
ENABLE DETECTOR DATA LOG?.....
ENABLE DETECTOR (1-64).....
ENABLE DETECTOR DIAGNOSTICS (1-64)...
DISABLE DET STRETCH / DELAY (1-64)...
DISABLE DET STOP BAR MODE (1-64)...
SET LOGIC FLAG ON (1-16).....
SET LOGIC FLAG OFF (1-64).....
OVERIDE PHASE CONTROL FUNCTIONS?....
    
```

PRESS "+" FOR NEXT EVENT

```

SCHEDULED EVENT #2 INPUT OVERRIDE
START DATE (MM/DD).....**/**
END DATE (MM/DD).....**/**
START TIME (HH:MM).....**:**
STOP TIME (HH:MM).....**:**
DOW 1SUN MON TUE WED THR FRI SAT
ENABLED 1 * * * * *
EVENT GROUPS |12345678910111213141516
ASSIGNED

DELETE EVENT WHEN COMPLETED?.....N
CONTINUOUS EVENT?.....N
INVERT EVENT?.....N
SELECT 1 EVENT TYPE:
EVENT GROUP (1-16).....
PLAN (65=FLSH,66=FREE)..... OFFSET#...
PLAN PRIORITY: LOW... MED... HIGH...
CHANGE PHASE SEQUENCE PAGE (1-12)....
CHANGE PHASE TIMING PAGE (1-4).....
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)....
CHANGE INPUT PAGE (1-4).....
CHANGE OUTPUT PAGE (1-4).....
SET OUTPUT ON (1-64).....
SET OUTPUT OFF (1-64).....
SET INPUT ON (1-64).....
SET INPUT OFF (1-64).....10
ENABLE FAILURES LOG?.....
ENABLE EVENTS LOG?.....
ENABLE DATA ENTRIES LOG?.....
ENABLE COORDINATION PLANS LOG?.....
ENABLE SPECIAL FUNCTIONS LOG?.....
ENABLE SLIT MONITOR LOG?.....
ENABLE DETECTOR DATA LOG?.....
ENABLE DETECTOR (1-64).....
ENABLE DETECTOR DIAGNOSTICS (1-64)...
DISABLE DET STRETCH / DELAY (1-64)...
DISABLE DET STOP BAR MODE (1-64)...
SET LOGIC FLAG ON (1-16).....
SET LOGIC FLAG OFF (1-64).....
OVERIDE PHASE CONTROL FUNCTIONS?....
    
```

PRESS "+" FOR NEXT EVENT

```

SCHEDULED EVENT #3 INPUT OVERRIDE
START DATE (MM/DD).....**/**
END DATE (MM/DD).....**/**
START TIME (HH:MM).....**:**
STOP TIME (HH:MM).....**:**
DOW 1SUN MON TUE WED THR FRI SAT
ENABLED 1 * * * * *
EVENT GROUPS |12345678910111213141516
ASSIGNED

DELETE EVENT WHEN COMPLETED?.....N
CONTINUOUS EVENT?.....N
INVERT EVENT?.....N
SELECT 1 EVENT TYPE:
EVENT GROUP (1-16).....
PLAN (65=FLSH,66=FREE)..... OFFSET#...
PLAN PRIORITY: LOW... MED... HIGH...
CHANGE PHASE SEQUENCE PAGE (1-12)....
CHANGE PHASE TIMING PAGE (1-4).....
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)....
CHANGE INPUT PAGE (1-4).....
CHANGE OUTPUT PAGE (1-4).....
SET OUTPUT ON (1-64).....
SET OUTPUT OFF (1-64).....
SET INPUT ON (1-64).....
SET INPUT OFF (1-64).....9
ENABLE FAILURES LOG?.....
ENABLE EVENTS LOG?.....
ENABLE DATA ENTRIES LOG?.....
ENABLE COORDINATION PLANS LOG?.....
ENABLE SPECIAL FUNCTIONS LOG?.....
ENABLE SLIT MONITOR LOG?.....
ENABLE DETECTOR DATA LOG?.....
ENABLE DETECTOR (1-64).....
ENABLE DETECTOR DIAGNOSTICS (1-64)...
DISABLE DET STRETCH / DELAY (1-64)...
DISABLE DET STOP BAR MODE (1-64)...
SET LOGIC FLAG ON (1-16).....
SET LOGIC FLAG OFF (1-64).....
OVERIDE PHASE CONTROL FUNCTIONS?....
    
```

PRESS "+" FOR NEXT EVENT

```

SCHEDULED EVENT #4 DETECTOR CONTROL
START DATE (MM/DD).....**/**
END DATE (MM/DD).....**/**
START TIME (HH:MM).....**:**
STOP TIME (HH:MM).....**:**
DOW 1SUN MON TUE WED THR FRI SAT
ENABLED 1 * * * * *
EVENT GROUPS |12345678910111213141516
ASSIGNED

DELETE EVENT WHEN COMPLETED?.....N
CONTINUOUS EVENT?.....N
INVERT EVENT?.....N
SELECT 1 EVENT TYPE:
EVENT GROUP (1-16).....
PLAN (65=FLSH,66=FREE)..... OFFSET#...
PLAN PRIORITY: LOW... MED... HIGH...
CHANGE PHASE SEQUENCE PAGE (1-12)....
CHANGE PHASE TIMING PAGE (1-4).....
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)....
CHANGE INPUT PAGE (1-4).....
CHANGE OUTPUT PAGE (1-4).....
SET OUTPUT ON (1-64).....
SET OUTPUT OFF (1-64).....
SET INPUT ON (1-64).....
SET INPUT OFF (1-64).....
ENABLE FAILURES LOG?.....
ENABLE EVENTS LOG?.....
ENABLE DATA ENTRIES LOG?.....
ENABLE COORDINATION PLANS LOG?.....
ENABLE SPECIAL FUNCTIONS LOG?.....
ENABLE SLIT MONITOR LOG?.....
ENABLE DETECTOR DATA LOG?.....
ENABLE DETECTOR (1-64).....
ENABLE DETECTOR DIAGNOSTICS (1-64)...
DISABLE DET STRETCH / DELAY (1-64)...
DISABLE DET STOP BAR MODE (1-64)...
SET LOGIC FLAG ON (1-16).....
SET LOGIC FLAG OFF (1-64).....
OVERIDE PHASE CONTROL FUNCTIONS?....
    
```

PRESS "+" FOR NEXT EVENT

```

SCHEDULED EVENT #5 DETECTOR CONTROL
START DATE (MM/DD).....**/**
END DATE (MM/DD).....**/**
START TIME (HH:MM).....**:**
STOP TIME (HH:MM).....**:**
DOW 1SUN MON TUE WED THR FRI SAT
ENABLED 1 * * * * *
EVENT GROUPS |12345678910111213141516
ASSIGNED

DELETE EVENT WHEN COMPLETED?.....N
CONTINUOUS EVENT?.....N
INVERT EVENT?.....N
SELECT 1 EVENT TYPE:
EVENT GROUP (1-16).....
PLAN (65=FLSH,66=FREE)..... OFFSET#...
PLAN PRIORITY: LOW... MED... HIGH...
CHANGE PHASE SEQUENCE PAGE (1-12)....
CHANGE PHASE TIMING PAGE (1-4).....
CHANGE PHASE CONTROL PAGE (1-4).....
CHANGE OVERLAP CONTROL PAGE (1-4)....
CHANGE INPUT PAGE (1-4).....
CHANGE OUTPUT PAGE (1-4).....
SET OUTPUT ON (1-64).....
SET OUTPUT OFF (1-64).....
SET INPUT ON (1-64).....
SET INPUT OFF (1-64).....
ENABLE FAILURES LOG?.....
ENABLE EVENTS LOG?.....
ENABLE DATA ENTRIES LOG?.....
ENABLE COORDINATION PLANS LOG?.....
ENABLE SPECIAL FUNCTIONS LOG?.....
ENABLE SLIT MONITOR LOG?.....
ENABLE DETECTOR DATA LOG?.....
ENABLE DETECTOR (1-64).....
ENABLE DETECTOR DIAGNOSTICS (1-64)...
DISABLE DET STRETCH / DELAY (1-64)...
DISABLE DET STOP BAR MODE (1-64)...
SET LOGIC FLAG ON (1-16).....
SET LOGIC FLAG OFF (1-64).....
OVERIDE PHASE CONTROL FUNCTIONS?....
    
```

TOD PROGRAMMING COMPLETE

**ALTERNATE PHASING NOTES**

THIS EVENT SCHEDULING DETAIL SHOWS THE TOD PROGRAMMING STEPS NECESSARY FOR THE CONTROLLER TO OPERATE THE "ALTERNATE PHASING" AS SHOWN ON THE SIGNAL PLANS.

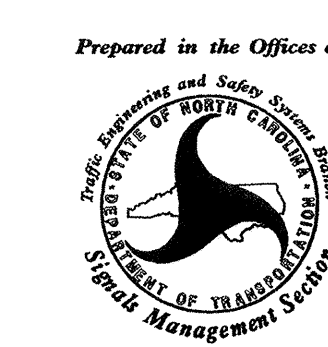
THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN THESE TOD EVENTS ACTIVATE TO CALL THE "ALTERNATE PHASING":

**EVENT NO.**

1. OUPUT PAGE 2 IS CALLED: Modifies control circuits for signal heads 11 and 51.
2. INPUT 10 IS SWITCHED OFF: Disables phase 6 call on loop 1A.
3. INPUT 9 IS SWITCHED OFF: Disables phase 2 call on loop 5A.
4. DELAY IS DISABLED FOR DETECTOR 1 (Phase 1, Loop 1A).
5. DELAY IS DISABLED FOR DETECTOR 5 (Phase 5, Loop 5A).

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 12-1749  
 DESIGNED: September 2008  
 SEALED: 10-30-08  
 REVISED: N/A

New Installation - Sheet 4 of 4

 <p>750 N. Greenfield Parkway, Garner, NC 27529</p>	ELECTRICAL AND PROGRAMMING DETAILS FOR:	SR 1100 (Brawley School Road) at Rolling Hills Road / Gibbs Road	SEAL NORTH CAROLINA PROFESSIONAL ENGINEER JOHN T. ROWE, JR. SEAL 008453
	Prepared in the Offices of: Traffic Engineering and Signal Systems Department of Transportation Signal Management Section	Division 12 Iredell County Mooresville PLAN DATE: September 2008 REVIEWED BY: JTR PREPARED BY: James Peterson REVIEWED BY:	REVISIONS:      INIT:      DATE:

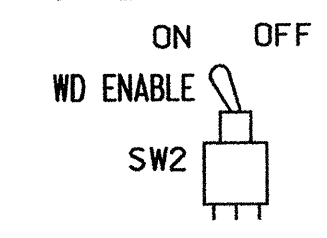




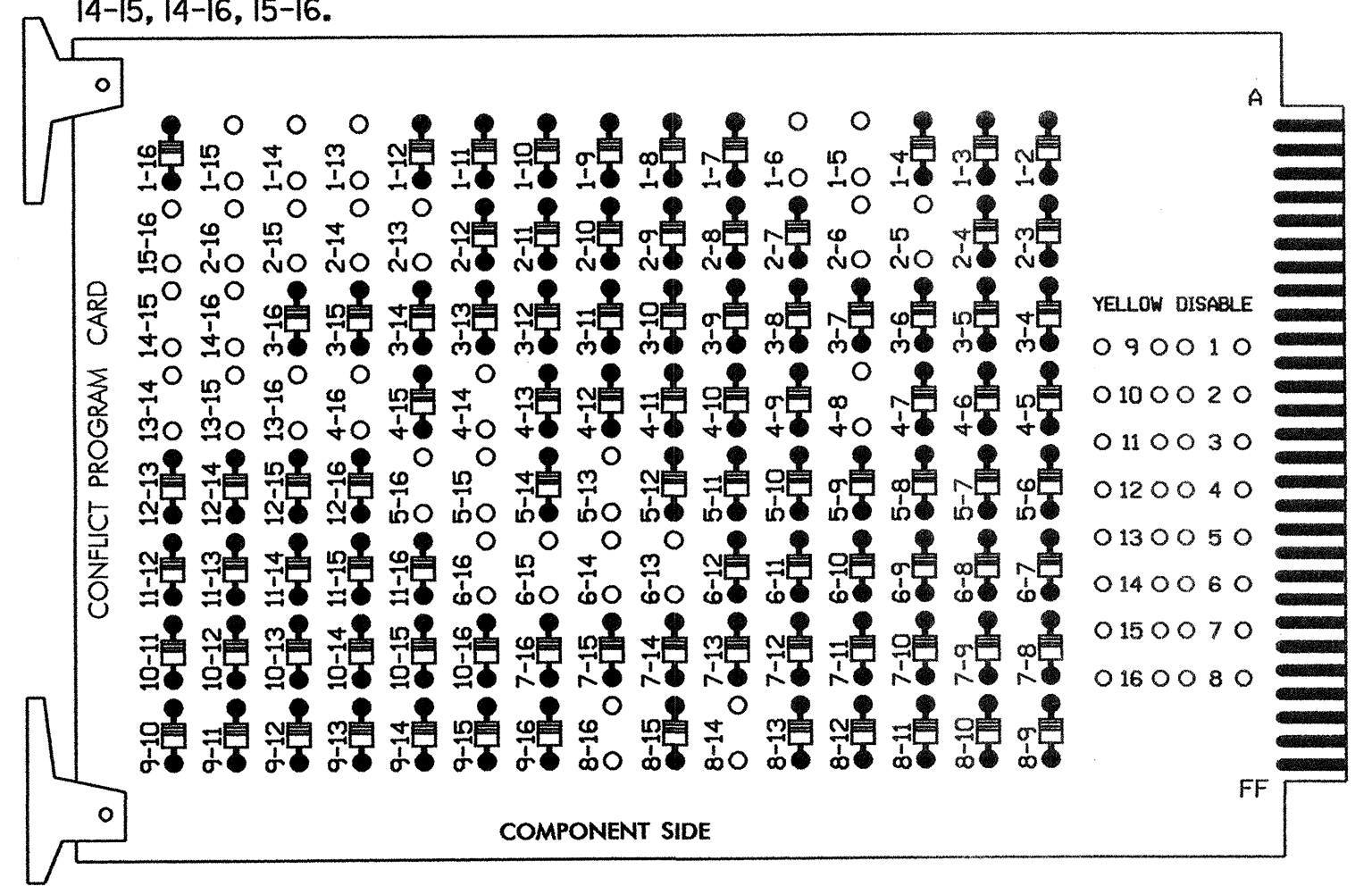


**EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL**

(remove jumpers and set switches as shown)



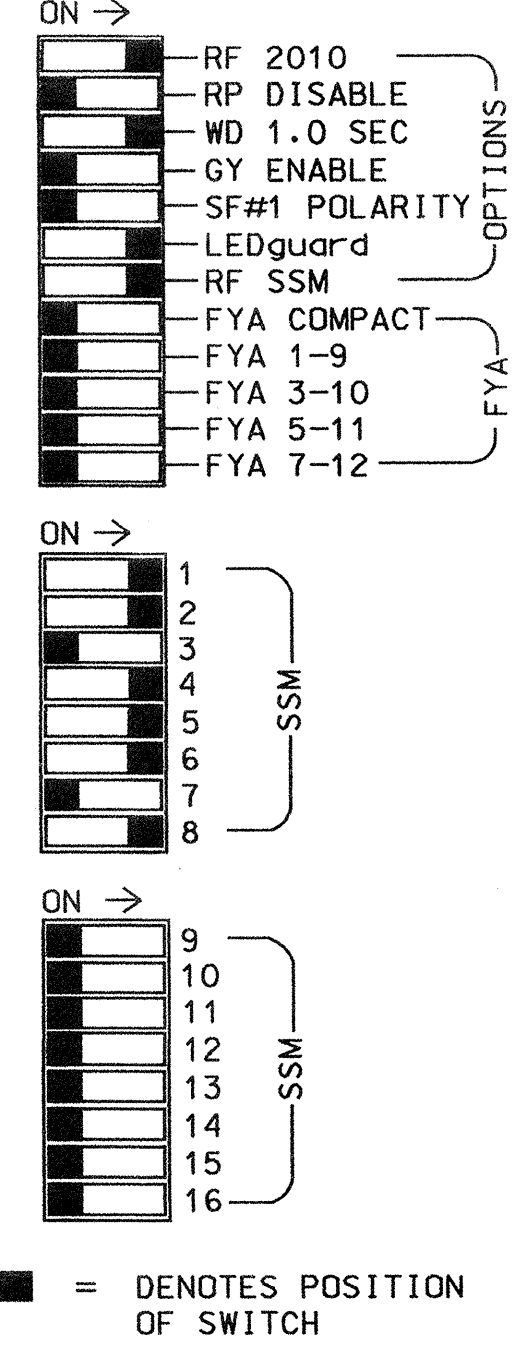
REMOVE DIODE JUMPERS 1-5, 1-6, 1-13, 1-14, 1-15, 2-5, 2-6, 2-13, 2-14, 2-15, 2-16, 4-8, 4-14, 4-16, 5-13, 5-15, 5-16, 6-13, 6-14, 6-15, 6-16, 8-14, 8-16, 13-14, 13-15, 13-16, 14-15, 14-16, 15-16.



REMOVE JUMPERS AS SHOWN

**NOTES:**

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.



■ = DENOTES POSITION OF SWITCH

**NOTES**

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 3,7,9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 2 and 6, on the controller unit, for Start Up In Green.
- Enable Simultaneous Gap-Out, on the controller unit, for all phases.
- Program phases 4 and 8, on the controller unit, for Dual Entry.
- Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
- Program phases 1, 2, 4, 5, 6 and 8 for 'STARTUP PED CALL'.
- The cabinet and controller are part of the SR 1100 (Brawley School Rd) Closed Loop System.

**SIGNAL HEAD HOOK-UP CHART**

LOAD SWITCH NO.	S1	S2	S2P*	S3	S4	S4P*	S5	S6	S6P*	S7	S8	S8P*
PHASE	1	2	PED OLA	3	4	PED OLB	5	6	PED OLC	7	8	PED OLD
SIGNAL HEAD NO.	11,12	21,22	P11, P12	NU	41,42 43	P41, P42	51,52	61,62	P51, P52	NU	81,82 83	P81, P82
RED		128			101			134				107
YELLOW		129			102			135				108
GREEN		130			103			136				109
RED ARROW	125				101			131				107
YELLOW ARROW	126				102			132				108
GREEN ARROW	127				103			133				109
Hand			113				104		119			110
Walker			115				106		121			112

NU = Not Used  
\* Denotes output changes required. See sheets 3 and 4 of this Electrical Detail.

**EQUIPMENT INFORMATION**

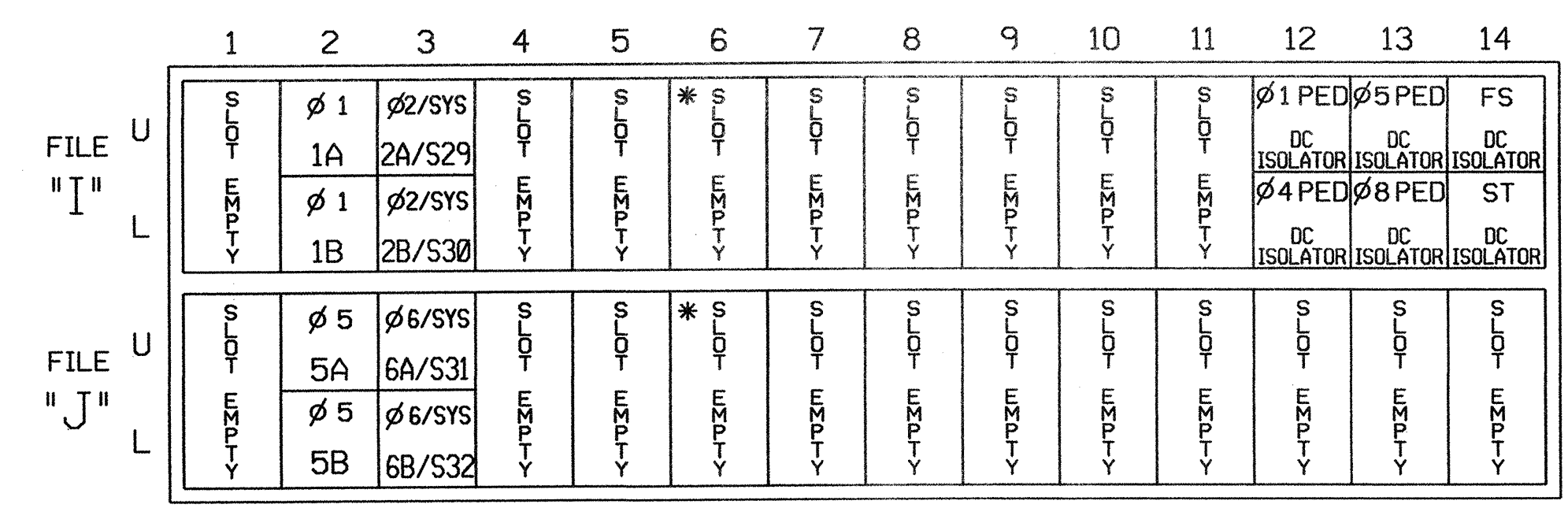
CONTROLLER.....CONTRACTOR SUPPLIED 2070L  
 CABINET.....CONTRACTOR SUPPLIED 332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S1,S2,S2P,S4,S4P,S5,S6,S6P,S8,S8P  
 PHASES USED.....1,2,4,5,6,8,1 PED,2 PED,4 PED,5 PED, 6 PED,8 PED  
 VEHICLE OVERLAPS.....NONE  
 PED OVERLAP A:.....1+2  
 PED OVERLAP B:.....4+6  
 PED OVERLAP C:.....5+6  
 PED OVERLAP D:.....2+8

**COUNTDOWN PEDESTRIAN SIGNAL OPERATION**

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

**INPUT FILE POSITION LAYOUT**

(front view)

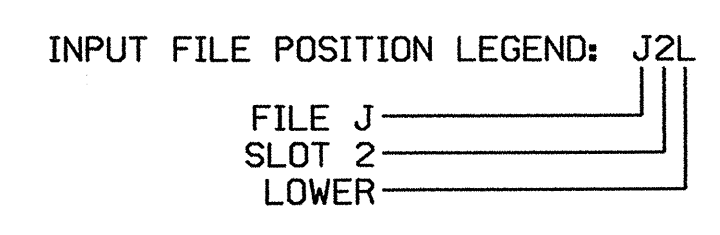


EX.: 1A, 2A, ETC. = LOOP NO.'S  
 \*Microwave Detector. See wiring detail.  
 FS = FLASH SENSE  
 ST = STOP TIME

**INPUT FILE CONNECTION & PROGRAMMING CHART**

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-5,6	I2U	39	1	2	1	Y	Y			3
1B	TB2-7,8	I2L	43	5	12	1	Y	Y			
2A/S29	TB2-9,10	I3U	63	25	32	2/SYS	Y	Y			
2B/S30	TB2-11,12	I3L	76	38	42	2/SYS	Y	Y			
4A	*	I6U	41	3	4	4	Y	Y			
5A	TB3-5,6	J2U	40	2	6	5	Y	Y			3
5B	TB3-7,8	J2L	44	6	16	5	Y	Y			
6A/S31	TB3-9,10	J3U	64	26	36	6/SYS	Y	Y			
6B/S32	TB3-11,12	J3L	77	39	46	6/SYS	Y	Y			
8A	*	J6U	42	4	8	8	Y	Y			
PED PUSH BUTTONS											
P11,P12	TB8-4,6	I12U	67	29		PED 2	1 PED, 2 PED				
P41,P42	TB8-5,6	I12L	69	31		PED 4	4 PED, 6 PED				
P51,P52	TB8-7,9	I13U	68	30		PED 6	5 PED, 6 PED				
P81,P82	TB8-8,9	I13L	70	32		PED 8	2 PED, 8 PED				

\*Microwave Detector. See wiring detail sheet 2.



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 12-1748  
 DESIGNED: September 2008  
 SEALED: 10-30-08  
 REVISED: N/A

New Installation - Sheet 1 of 4

Prepared in the Office of:  
  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 OFFICE OF TRAFFIC ENGINEERING AND SAFETY

SEAL  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 SEAL 008453  
 JOHN T. ROWE, P.E.

SR 1100 (Brawley School Rd.)  
 at  
 I-77 Ramps A, B, C, & D

Division 12 Iredell County Mooresville  
 PLAN DATE: October 2008 REVIEWED BY: JTR  
 PREPARED BY: James Peterson REVIEWED BY:  
 REVISIONS INIT. DATE  
 SIGNATURE DATE  
 SIG. INVENTORY NO. 12-1748



**ACCUWAVE DETECTOR PANEL WIRING DETAILS**  
(wire as shown)

**PEDESTRIAN OVERLAP PROGRAMMING DETAIL**

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '2' (PEDESTRIAN OVERLAP SETTINGS).

PAGE 1: PEDESTRIAN OVERLAP 'A' SETTINGS  
PHASE: ;12345678910111213141516  
PED OVL PARENTS: ;XX

PRESS '+'

PAGE 1: PEDESTRIAN OVERLAP 'B' SETTINGS  
PHASE: ;12345678910111213141516  
PED OVL PARENTS: ; X X

PRESS '+'

PAGE 1: PEDESTRIAN OVERLAP 'C' SETTINGS  
PHASE: ;12345678910111213141516  
PED OVL PARENTS: ; XX

PRESS '+'

PAGE 1: PEDESTRIAN OVERLAP 'D' SETTINGS  
PHASE: ;12345678910111213141516  
PED OVL PARENTS: ; X X

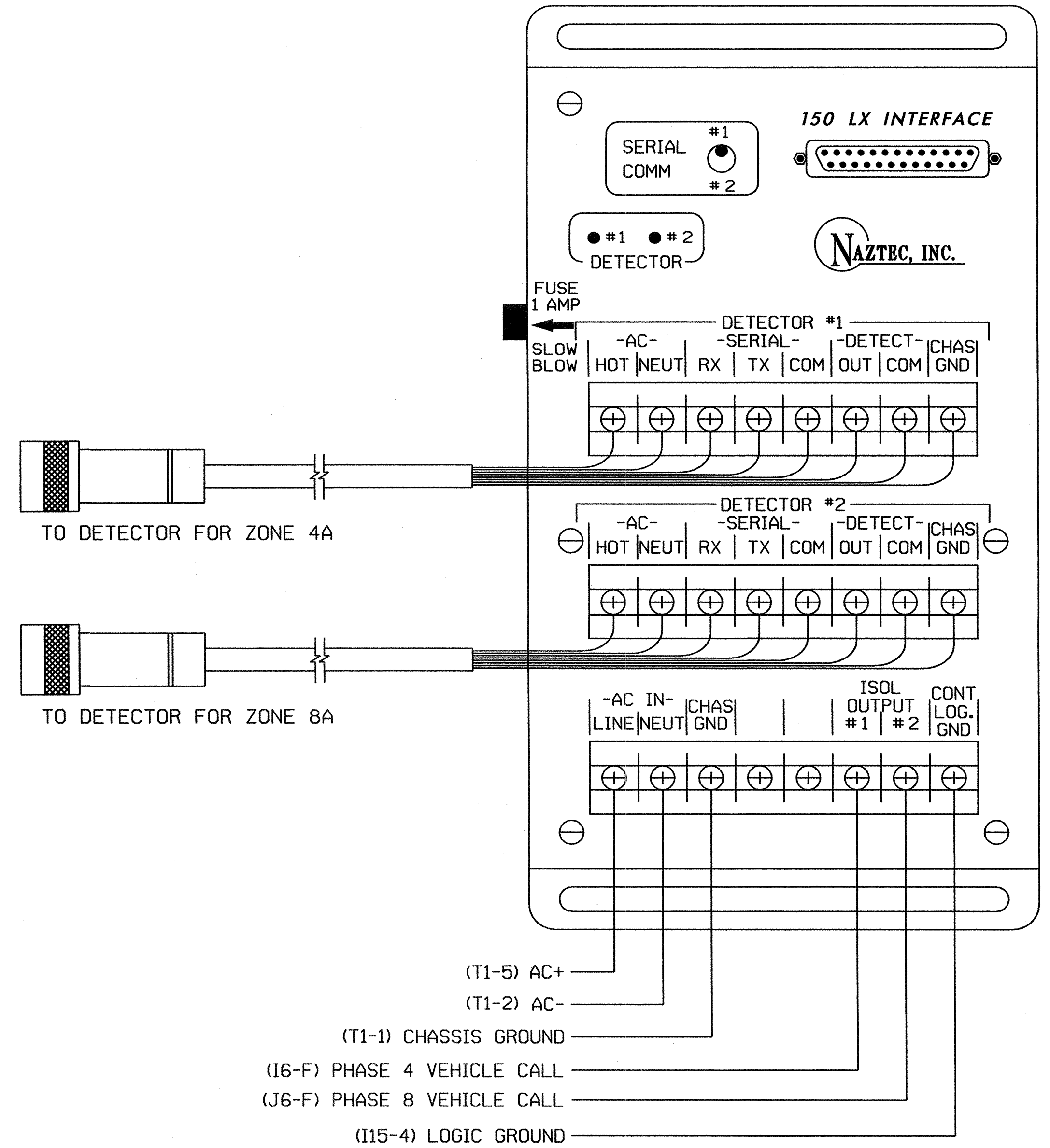
PED OVERLAP PROGRAMMING COMPLETE

**WIRE LIST FOR ACCUWAVE DETECTOR CABLE**

COLOR	PIN#	SET #	PANEL CONNECTIONS
BLACK	A	SET 1	AC HOT
WHITE	B	SET 1	AC NEUTRAL
SILVER	C	SET 1	CHASSIS GROUND
BROWN	D	SET 4	SERIAL TX
BLACK	E	SET 2,4	SERIAL COMMON
RED	F	SET 2	SERIAL RX
SILVER	N.C.	SET 2,4	NO CONNECTION
BLUE	H	SET 3	DETECTOR COMMON
BLACK	L	SET 3	DETECTOR OUT
YELLOW	M	1/2SET	NO CONNECTION

**NOTES:**

1. Detector is an Accuwave Model 150LX presence detector.
2. Information in the detector cable wire list chart is for cable purchased from Naztec and may vary if purchased from another source.



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 12-1748  
DESIGNED: September 2008  
SEALED: 10-30-08  
REVISED: N/A

New Installation - Sheet 2 of 4

ELECTRICAL AND PROGRAMMING DETAILS FOR:  Prepared in the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	<b>SR 1100 (Brawley School Rd.) at I-77 Ramps A, B, C, &amp; D</b>		SEAL  SEAL 008453 JOHN T. ROWE, P.E. SIGNATURE DATE 11-9-08
	Division 12 Iredell County Mooresville PLAN DATE: October 2008 REVIEWED BY: JTK PREPARED BY: James Peterson REVIEWED BY:	REVISIONS INIT. DATE	

## PEDESTRIAN OVERLAP OUTPUT ASSIGNMENT PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). PRESS '+' UNTIL OUTPUT #9 (PIN 10) IS REACHED.

CONVERTING FROM PED 2 TO PED OVERLAP A

```

PAGE:1 C1 PIN:10 PEDESTRIAN PHASE
OUTPUT ASSIGNMENT #.....9
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

THE PEDESTRIAN PHASE 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```

PAGE:1 C1 PIN:10 PEDESTRIAN PHASE
SELECT PED OVERLAP (A=1,P=16).....1
SELECT COLOR(0=DWALK,1=YEL,2=WALK)..0
    
```

WHEN A 'Y' IS ENTERED FOR 'PEDESTRIAN OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.  
PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'PEDESTRIAN OVERLAP' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:10 PEDESTRIAN OVERLAP
OUTPUT ASSIGNMENT #.....9
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

PRESS "+" KEY FOR OUTPUT 10

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'PEDESTRIAN OVERLAP' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:11 PEDESTRIAN PHASE
OUTPUT ASSIGNMENT #.....10
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

THE PEDESTRIAN PHASE 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```

PAGE:1 C1 PIN:11 PEDESTRIAN PHASE
SELECT PED OVERLAP (A=1,P=16).....1
SELECT COLOR(0=DWALK,1=YEL,2=WALK)..2
    
```

WHEN A 'Y' IS ENTERED FOR 'PEDESTRIAN OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.  
PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

OUTPUT ASSIGNMENT PROGRAMMING COMPLETE

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). PRESS '+' UNTIL OUTPUT #1 (PIN 2) IS REACHED.

CONVERTING FROM PED 4 TO PED OVERLAP B

```

PAGE:1 C1 PIN:2 PEDESTRIAN PHASE
OUTPUT ASSIGNMENT #.....1
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

THE PEDESTRIAN PHASE 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```

PAGE:1 C1 PIN:2 PEDESTRIAN PHASE
SELECT PED OVERLAP (A=1,P=16).....2
SELECT COLOR(0=DWALK,1=YEL,2=WALK)..0
    
```

WHEN A 'Y' IS ENTERED FOR 'PEDESTRIAN OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.  
PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

PRESS "+" KEY FOR OUTPUT 2

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'PEDESTRIAN OVERLAP' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:2 PEDESTRIAN OVERLAP
OUTPUT ASSIGNMENT #.....1
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'PEDESTRIAN OVERLAP' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:3 PEDESTRIAN PHASE
OUTPUT ASSIGNMENT #.....2
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

THE PEDESTRIAN PHASE 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```

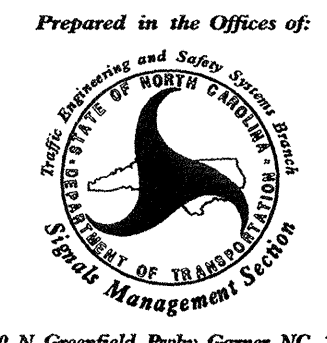
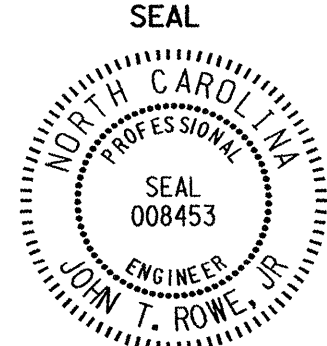
PAGE:1 C1 PIN:3 PEDESTRIAN PHASE
SELECT PED OVERLAP (A=1,P=16).....2
SELECT COLOR(0=DWALK,1=YEL,2=WALK)..2
    
```

WHEN A 'Y' IS ENTERED FOR 'PEDESTRIAN OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.  
PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

OUTPUT ASSIGNMENT PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 12-1748  
DESIGNED: September 2008  
SEALED: 10-30-08  
REVISED: N/A

New Installation - Sheet 3 of 4

	<p><b>SR 1100 (Brawley School Rd.) at I-77 Ramps A, B, C, &amp; D</b></p> <p>Division 12    Iredell County    Mooresville</p> <p>PLAN DATE: October 2008    REVIEWED BY: JTK</p> <p>PREPARED BY: James Peterson    REVIEWED BY:</p>	<p>SEAL</p> 									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>			REVISIONS	INIT.	DATE						
REVISIONS	INIT.	DATE									
<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>		<p>John T. Rowe    11-9-08</p> <p>SIGNATURE    DATE</p> <p>SIG. INVENTORY NO. 12-1748</p>									

31-DCT-2008 09:59 S:\115 Signal\work\outputs\0\_montepeterson\121748\_she11e.dwg



## PEDESTRIAN OVERLAP OUTPUT ASSIGNMENT PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). PRESS '+' UNTIL OUTPUT #25 (PIN 27) IS REACHED.

CONVERTING FROM PED 6 TO PED OVERLAP C

```

PAGE:1 C1 PIN:27 PEDESTRIAN PHASE
OUTPUT ASSIGNMENT #.....25
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

THE PEDESTRIAN PHASE 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

PAGE:1 C1 PIN:19 PEDESTRIAN PHASE  
SELECT PED OVERLAP (A=1,P=16).....3  
SELECT COLOR(0=DWALK,1=YEL,2=WALK)..0

WHEN A 'Y' IS ENTERED FOR 'PEDESTRIAN OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.  
PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'PEDESTRIAN OVERLAP' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:27 PEDESTRIAN OVERLAP
OUTPUT ASSIGNMENT #.....25
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

PRESS "+" KEY FOR OUTPUT 26

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'PEDESTRIAN OVERLAP' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:28 PEDESTRIAN PHASE
OUTPUT ASSIGNMENT #.....26
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

THE PEDESTRIAN PHASE 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

PAGE:1 C1 PIN:20 PEDESTRIAN PHASE  
SELECT PED OVERLAP (A=1,P=16).....3  
SELECT COLOR(0=DWALK,1=YEL,2=WALK)..2

WHEN A 'Y' IS ENTERED FOR 'PEDESTRIAN OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.  
PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

OUTPUT ASSIGNMENT PROGRAMMING COMPLETE

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). PRESS '+' UNTIL OUTPUT #17 (PIN 19) IS REACHED.

CONVERTING FROM PED 8 TO PED OVERLAP D

```

PAGE:1 C1 PIN:19 PEDESTRIAN PHASE
OUTPUT ASSIGNMENT #.....17
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

THE PEDESTRIAN PHASE 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

PAGE:1 C1 PIN:19 PEDESTRIAN PHASE  
SELECT PED OVERLAP (A=1,P=16).....4  
SELECT COLOR(0=DWALK,1=YEL,2=WALK)..0

WHEN A 'Y' IS ENTERED FOR 'PEDESTRIAN OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.  
PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

PRESS "+" KEY FOR OUTPUT 18

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'PEDESTRIAN OVERLAP' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:19 PEDESTRIAN OVERLAP
OUTPUT ASSIGNMENT #.....17
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

```

PAGE:1 C1 PIN:20 PEDESTRIAN PHASE
OUTPUT ASSIGNMENT #.....18
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

THE PEDESTRIAN PHASE 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

PAGE:1 C1 PIN:20 PEDESTRIAN PHASE  
SELECT PED OVERLAP (A=1,P=16).....4  
SELECT COLOR(0=DWALK,1=YEL,2=WALK)..2

WHEN A 'Y' IS ENTERED FOR 'PEDESTRIAN OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.  
PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

OUTPUT ASSIGNMENT PROGRAMMING COMPLETE

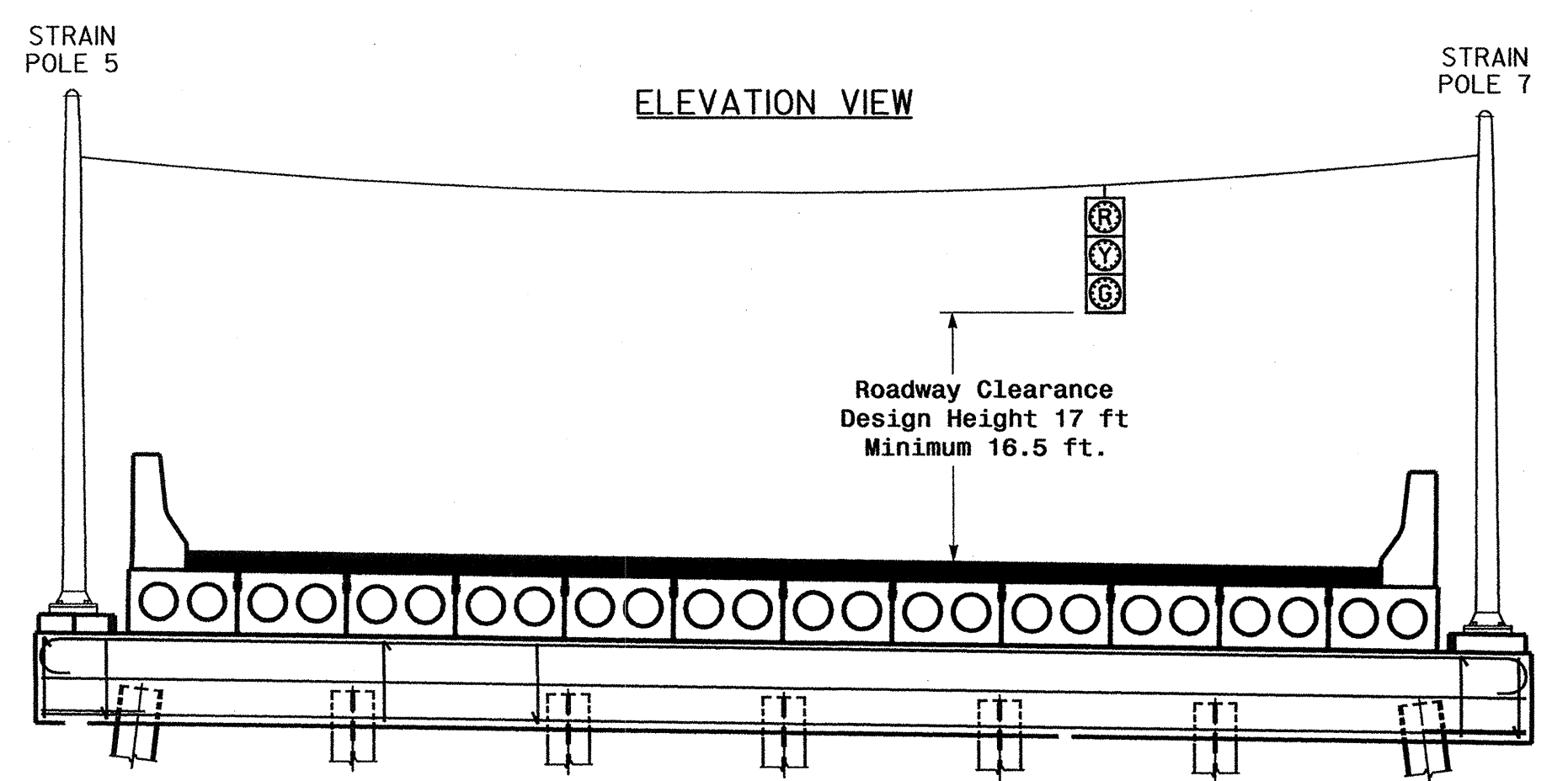
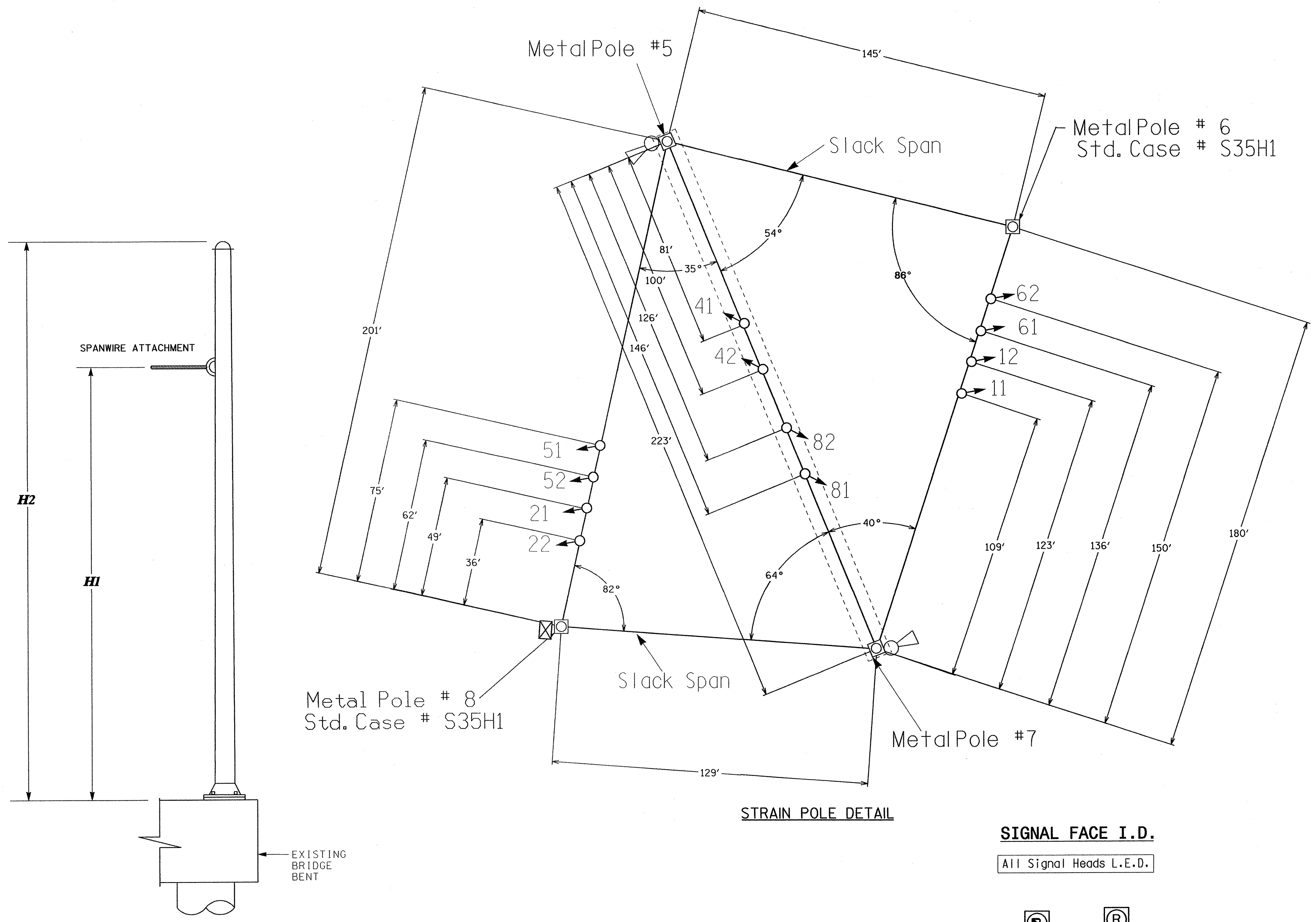
THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 12-1748  
DESIGNED: September 2008  
SEALED: 10-30-08  
REVISED: N/A

Signal Upgrade - Sheet 4 of 4

Prepared in the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	<b>SR 1100 (Brawley School Rd.) at I-77 Ramps A, B, C, &amp; D</b>	SEAL  JOHN T. ROWLEY, P.E.
Division 12 Iredell County Chapel Hill		
PLAN DATE: October 2008 REVIEWED BY: JTK		
PREPARED BY: James Peterson REVIEWED BY:		
REVISIONS	INIT.	DATE
Signature: <i>John T. Rowley</i>		Date: 11-9-08
SIG. INVENTORY NO. 12-1748		

**NOTES**

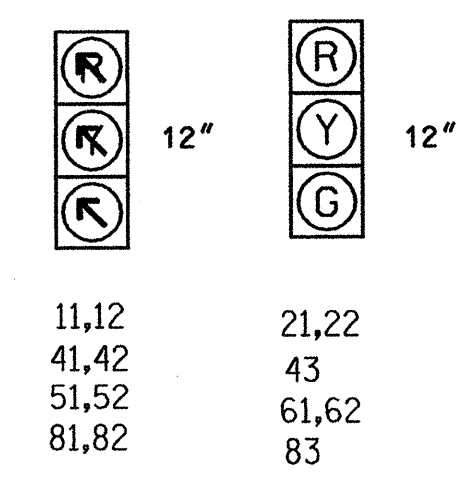
- Design Reference Material**
- Design the traffic signal structure and foundation in accordance with:
    - The 4th Edition 2001 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
    - The 2006 NCDOT "Standard Specifications for Roads and Structures". The latest addenda to these specifications can be found in the traffic signal project special provisions.
    - The 2006 NCDOT Roadway Standard Drawings.
    - The traffic signal project plans and special provisions.
- Design Requirements**
- Design the traffic signal structure using the loading conditions shown in this metal pole design. These are anticipated worst case "Design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
  - Design all signal supports using stress ratios that do not exceed 0.9.
  - Design base plate with 12 anchor bolt holes. Provide 2 inch x 48 inch anchor bolts.
  - The contractor is responsible for verifying the proper positioning of the signal heads over the roadway.
  - A maximum of 3% sag will be allowed.
  - Refer to Sig. 26 (M8) drawing for information regarding Metal Pole No.'s 6 & 8.



STRAIN POLE ELEVATION

**SIGNAL FACE I.D.**

All Signal Heads L.E.D.



**LEGEND**

- |                              |                 |
|------------------------------|-----------------|
| <b>PROPOSED</b>              | <b>EXISTING</b> |
| ○ → Traffic Signal Head      | ● → N/A         |
| ● → Modified Signal Head     | ⊠ →             |
| ⊠ → Controller & Cabinet     | ⊠ →             |
| ○ → Out of Pavement Detector | ⊠ →             |
| ⊠ → Metal Strain Pole        | ⊠ →             |

POLE NUMBER	SPAN		ATTACHMENT HEIGHT (H1) (ft)*	POLE HEIGHT (H2) (ft)*
	FROM POLE	TO POLE		
* 5	5	6	38.5	40
	5	8	37.7	
	5	7	37	
* 7	7	6	38.5	40
	7	8	37.7	
	7	8	37	

\* These poles require a 29" bolt circle with a 12 bolt pattern. Provide 12-2"x48" anchor bolts per pole.

**LOADING SCHEDULE**

	SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE, HANGER, AND BALANCE ADJUSTER	9.3 S.F.	25.5" W X 52.5" L	56 LBS
	OUT OF PAVEMENT DETECTOR	N/A	N/A	40 LBS

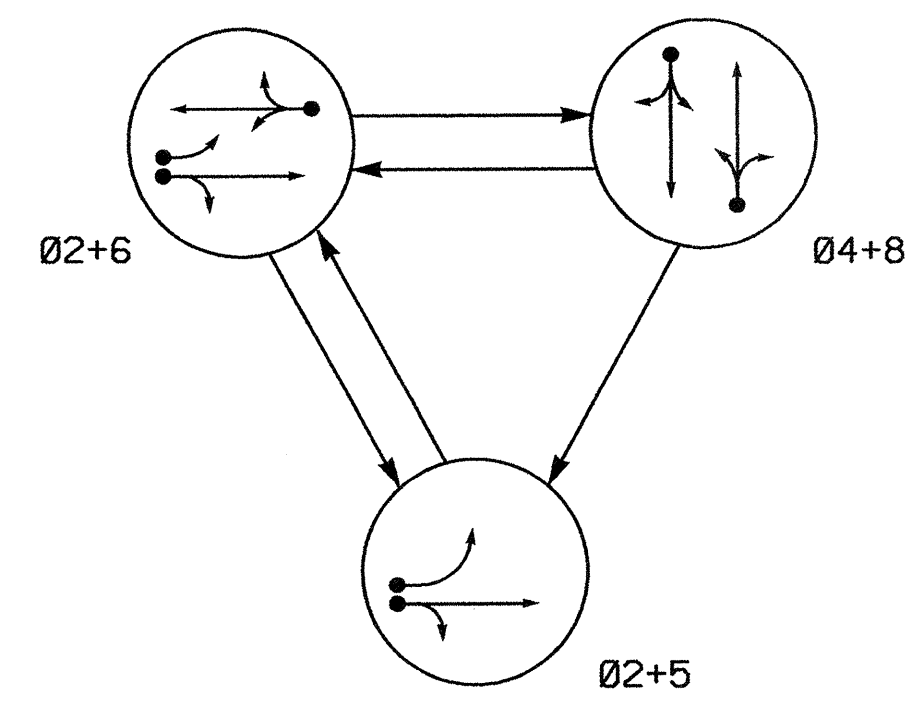
**Metal Pole Loading Diagram (Pole 5&7) Wind Zone 4 (90 MPH)**

	SR 1100 (Brawley School Rd.) at I-77 Ramps A, B, C, & D		
	Division 12 Iredell County Mooresville		
	PLAN DATE: September 2008	REVIEWED BY:	
	PREPARED BY: C. E. Pierce	REVIEWED BY:	
REVISIONS		INIT.	DATE
		SIGNATURE: <i>C. E. Pierce</i> DATE: _____ SIG. INVENTORY NO. 12-1748	

SFILES  
SDATES



**PHASING DIAGRAM**

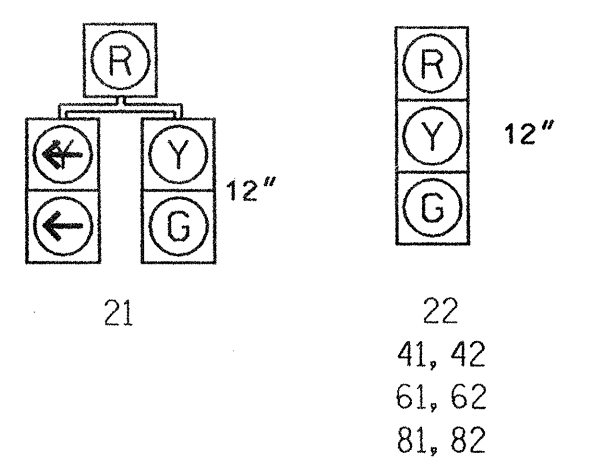


**PHASING DIAGRAM DETECTION LEGEND**  
 ● DETECTED MOVEMENT  
 ◐ UNDETECTED MOVEMENT (OVERLAP)  
 - - - UNSIGNALIZED MOVEMENT  
 - - - PEDESTRIAN MOVEMENT

SIGNAL FACE	PHASE				
	02+5	02+6	04+8	02+5	PEDESTRIAN
21	G	R	Y		
22	G	R	Y		
41, 42	R	R	G	R	
61, 62	R	G	R	Y	
81, 82	R	R	G	R	

**SIGNAL FACE I.D.**

All Signal Heads L.E.D.



**2070L ZONE & DETECTOR INSTALLATION**

ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW ZONE	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	300	*	*	2	Y	Y	-	1.6	-	-	*
2B	6X6	90	*	*	2	Y	Y	-	-	-	-	*
4A	6X40	0	*	*	4	Y	Y	-	-	5	-	*
5A	6X40	0	*	*	5	Y	Y	-	-	15	-	*
6A	6X6	300	*	*	6	Y	Y	-	1.6	-	-	*
6B	6X6	90	*	*	6	Y	Y	-	-	-	-	*
8A	6X40	0	*	*	8	Y	Y	-	-	5	-	*

\* Video Detection Zone

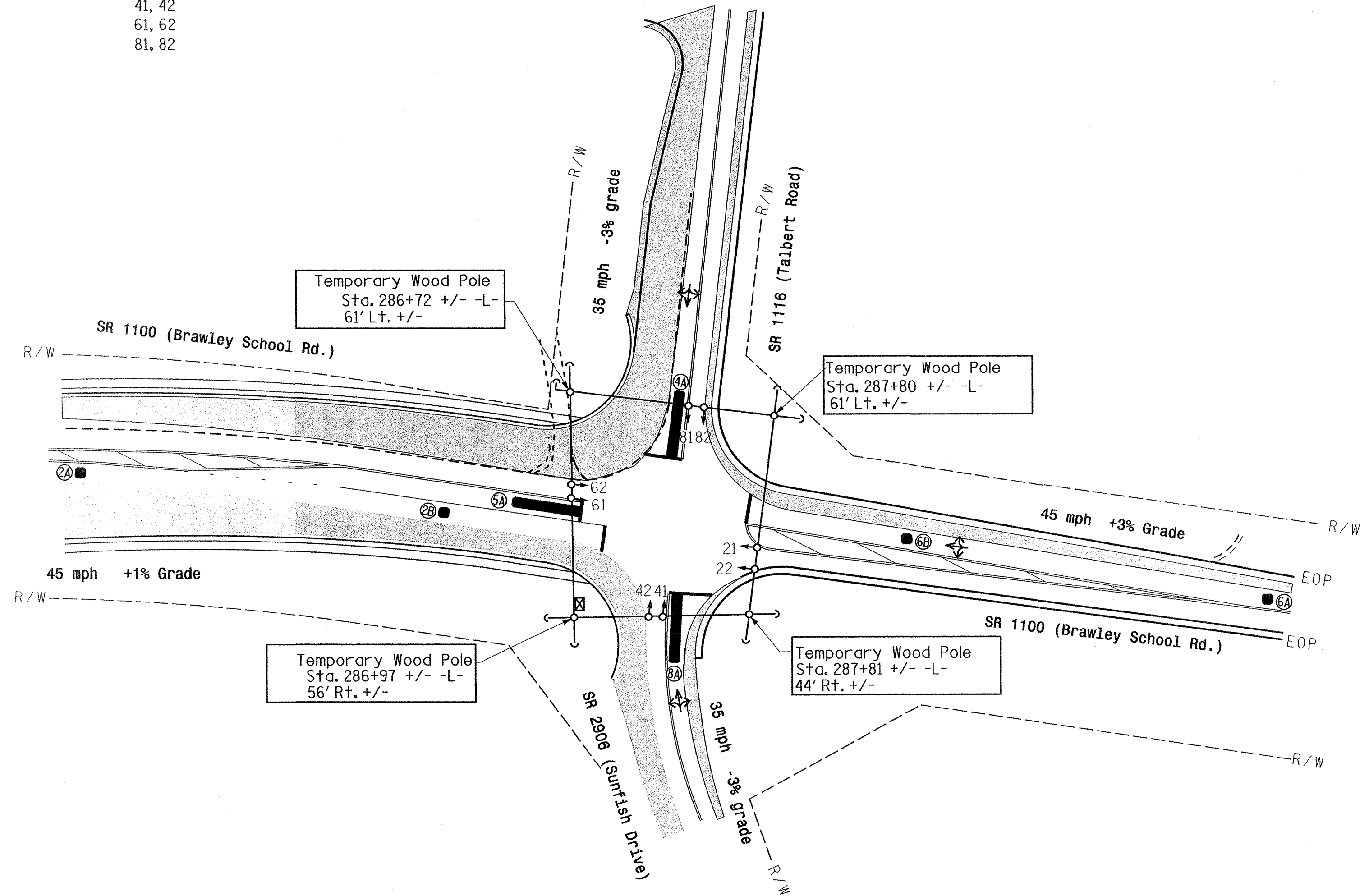
**3 Phase Fully Actuated Isolated**

**NOTES**

- Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Enable Backup Protect for phase 2 to allow the controller to clear from phase 2+6 to phase 2+5 by progressing through an all red display.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Incorporate Loop Emulator Detection System for Vehicle Detection.
- Provide the Engineer with the Manufacturer's approved camera locations and mounting heights to obtain detection zones as shown.

FEATURE	PHASE				
	2	4	5	6	8
Min Green 1 *	12	7	7	12	7
Extension 1 *	2.0	2.0	2.0	2.0	2.0
Max Green 1 *	75	30	15	75	30
Yellow Clearance	4.4	4.1	3.0	4.3	4.1
Red Clearance	1.0	1.1	2.1	1.0	1.1
Red Revert	5.0	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-	-
Don't Walk 1	-	-	-	-	-
Seconds Per Actuation *	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-
Time To Reduce *	-	-	-	-	-
Minimum Gap	-	-	-	-	-
Recall Mode	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	-	YELLOW	-
Dual Entry	-	ON	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON

\* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



PROPOSED		EXISTING	
○	Traffic Signal Head	●	N/A
◐	Modified Signal Head		
⊥	Sign	⊥	
⊥	Pedestrian Signal Head With Push Button & Sign	⊥	
⊥	Signal Pole with Guy	⊥	
⊥	Signal Pole with Sidewalk Guy	⊥	
⊥	Inductive Loop Detector	⊥	
⊥	Controller & Cabinet	⊥	
⊥	Junction Box	⊥	
⊥	2-in Underground Conduit	⊥	
N/A	Right of Way	⊥	
→	Directional Arrow	→	
→	Pavement Marking Arrow	→	
▭	Construction Zone	▭	
▭	Video Detection Zone	▭	

**Signal Upgrade - Temporary Signal 1- TCP Phase I**

	SR 1100 (Brawley School Road) at SR 2906 (Sunfish Drive) / SR 1116 (Talbert Road)	SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24393 THOMAS J. WILLIAMS
	Division 12 Iredell County Mooresville PLAN DATE: September 2008 PREPARED BY: C. Pierce REVIEWED BY:	
750 N. Greenfield Pkwy, Garner, NC 27529 SCALE 1"=50' REVISIONS INIT. DATE	REVISIONS INIT. DATE	SIGNATURE: <i>T. Williams</i> 10/30/08 DATE: 10/30/08 SIG. INVENTORY NO. 12-1689 T1

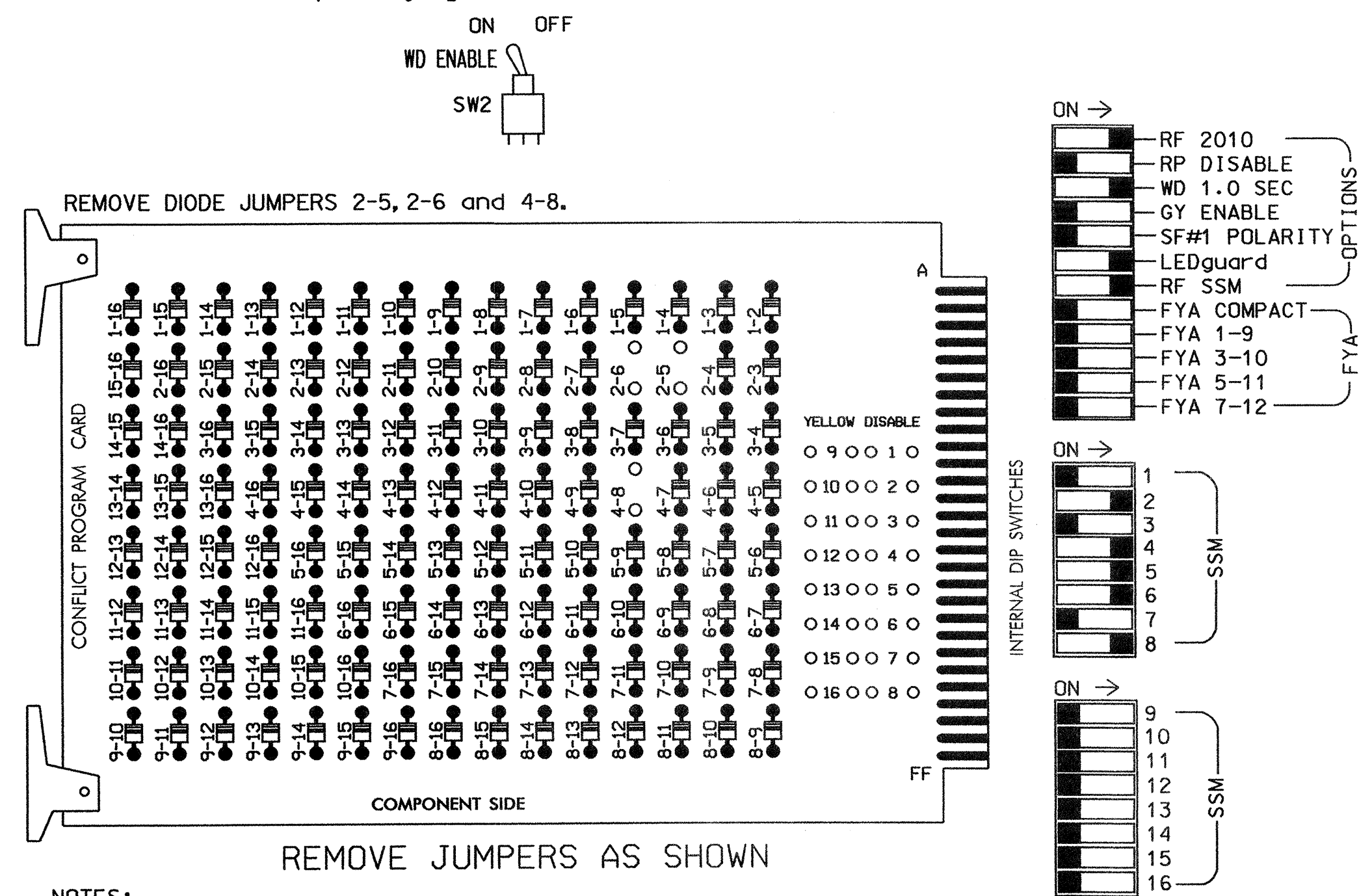
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 c:\pierce





**EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL**

(remove jumpers and set switches as shown)



**NOTES:**

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

**NOTES**

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 2 and 6, on the controller unit, for Start Up In Green.
- Enable Simultaneous Gap-Out, on the controller unit, for all phases.
- Program phases 4 and 8, on the controller unit, for Dual Entry.

**SIGNAL HEAD HOOK-UP CHART**

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P	S9	S10	S11	S12	S13	S14
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	21	61,62	NU	NU	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101		*	134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW																		
YELLOW ARROW								132										
GREEN ARROW								133										

NU = Not Used  
\* Denotes install load resistor. See load resistor installation detail this sheet.

**EQUIPMENT INFORMATION**

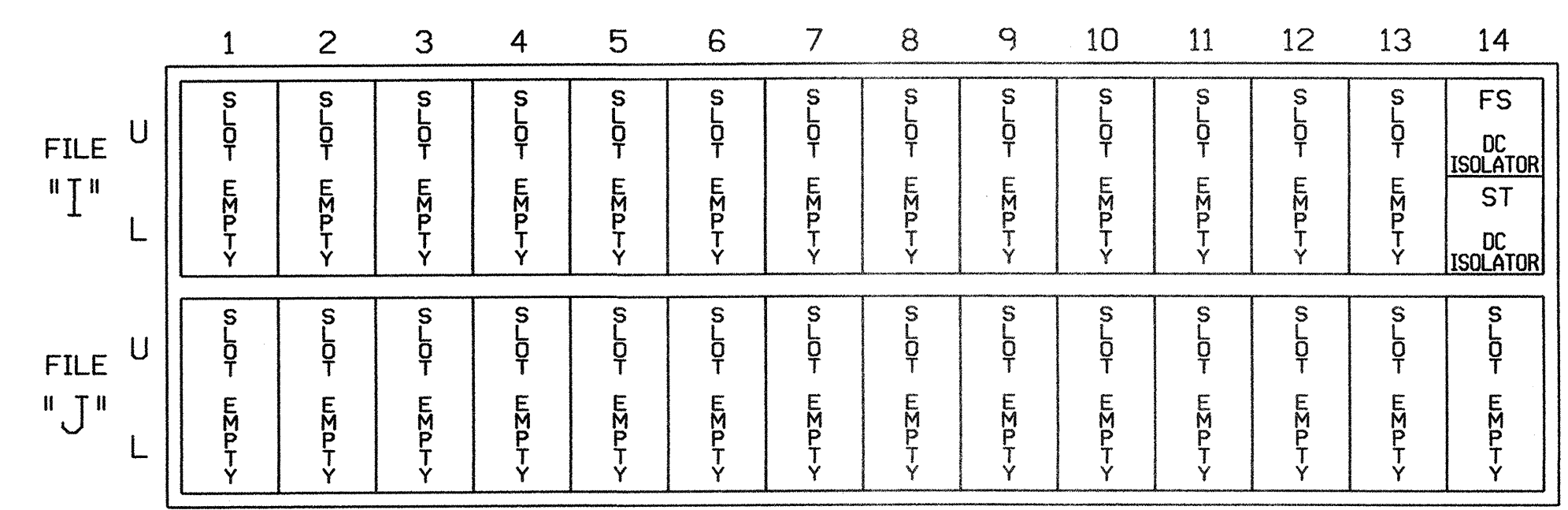
CONTROLLER.....CONTRACTOR SUPPLIED 2070L  
CABINET .....CONTRACTOR SUPPLIED 332  
SOFTWARE .....ECONOLITE OASIS  
CABINET MOUNT.....BASE  
OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)  
LOAD SWITCHES USED.....S2,S4,S5,S6,S8  
PHASES USED.....2,4,5,6,8  
OVERLAPS.....NONE

**BACKUP PROTECTION NOTE**

(program controller as shown below)  
From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phase 2 for 'Backup Protect'. Make sure the Red Revert times shown on the Signal Design Plans are programmed in the 'Phase Timing' menu.

**INPUT FILE POSITION LAYOUT**

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE  
ST = STOP TIME

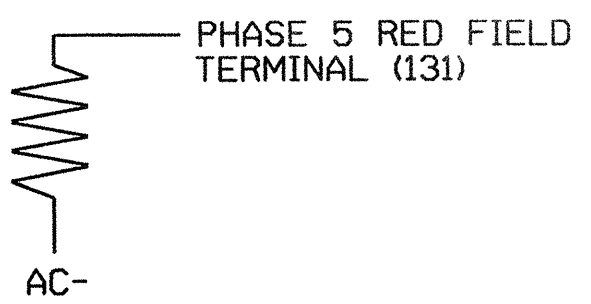
**SPECIAL DETECTOR NOTES**

INSTALL A LOOP EMULATOR DETECTION SYSTEM FOR VEHICLE DETECTION. PERFORM INSTALLATION ACCORDING TO MANUFACTURER'S DIRECTIONS AND NCDOT ENGINEER-APPROVED MOUNTING LOCATIONS TO ACCOMPLISH THE DETECTION SCHEMES SHOWN ON THE SIGNAL DESIGN PLANS.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 12-1689 T1 and 12-1689 T2  
DESIGNED: September 2008  
SEALED: 10-30-08  
REVISED: N/A

**LOAD RESISTOR INSTALLATION DETAIL**

ACCEPTABLE VALUES	VALUE (ohms)	WATTAGE
	1.5K - 1.9K	25W (min)
	2.0K - 3.0K	10W (min)



NOTE: The purpose of this resistor is to load the channel red monitor input in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on channels that do not use the red display in the field.

Signal Upgrade - Temp 1 and Temp 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: SR 1100 (Brawley School Road) at SR 2906 (Sunfish Drive) / SR 1116 (Talbert Road)

Division 12 Iredell County Mooresville

PLAN DATE: October 2008 REVIEWED BY: JTR

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS: INIT. DATE

750 N. Greenfield Pkwy, Garner, NC 27529

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 008453 JOHN T. ROWE, P.E.

SIGNATURE: DATE: 11-3-08

SIG. INVENTORY NO. 12-1689 T

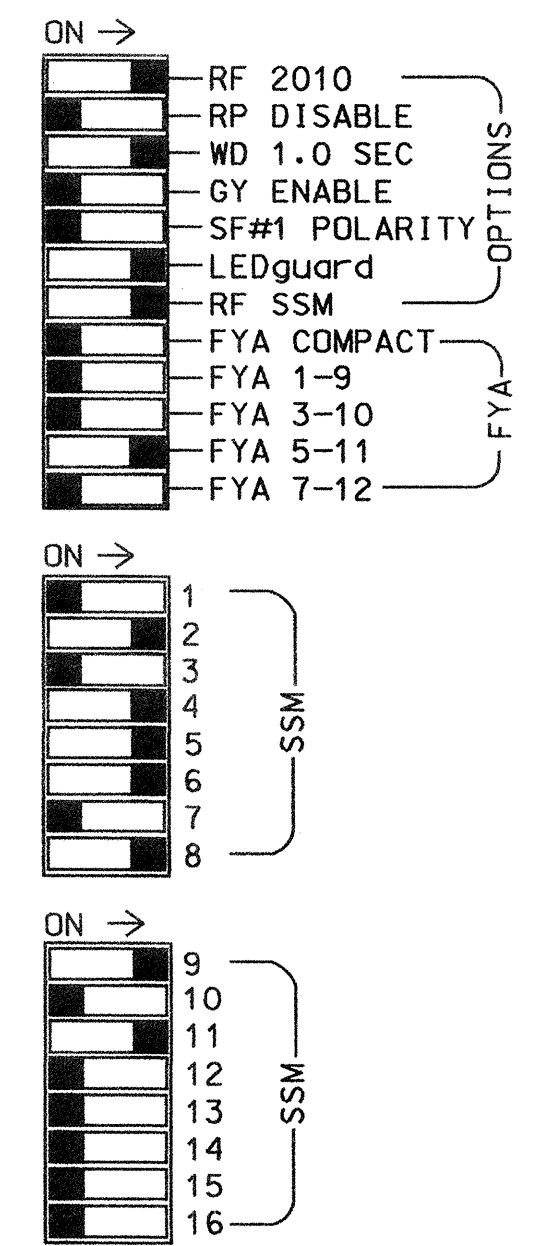
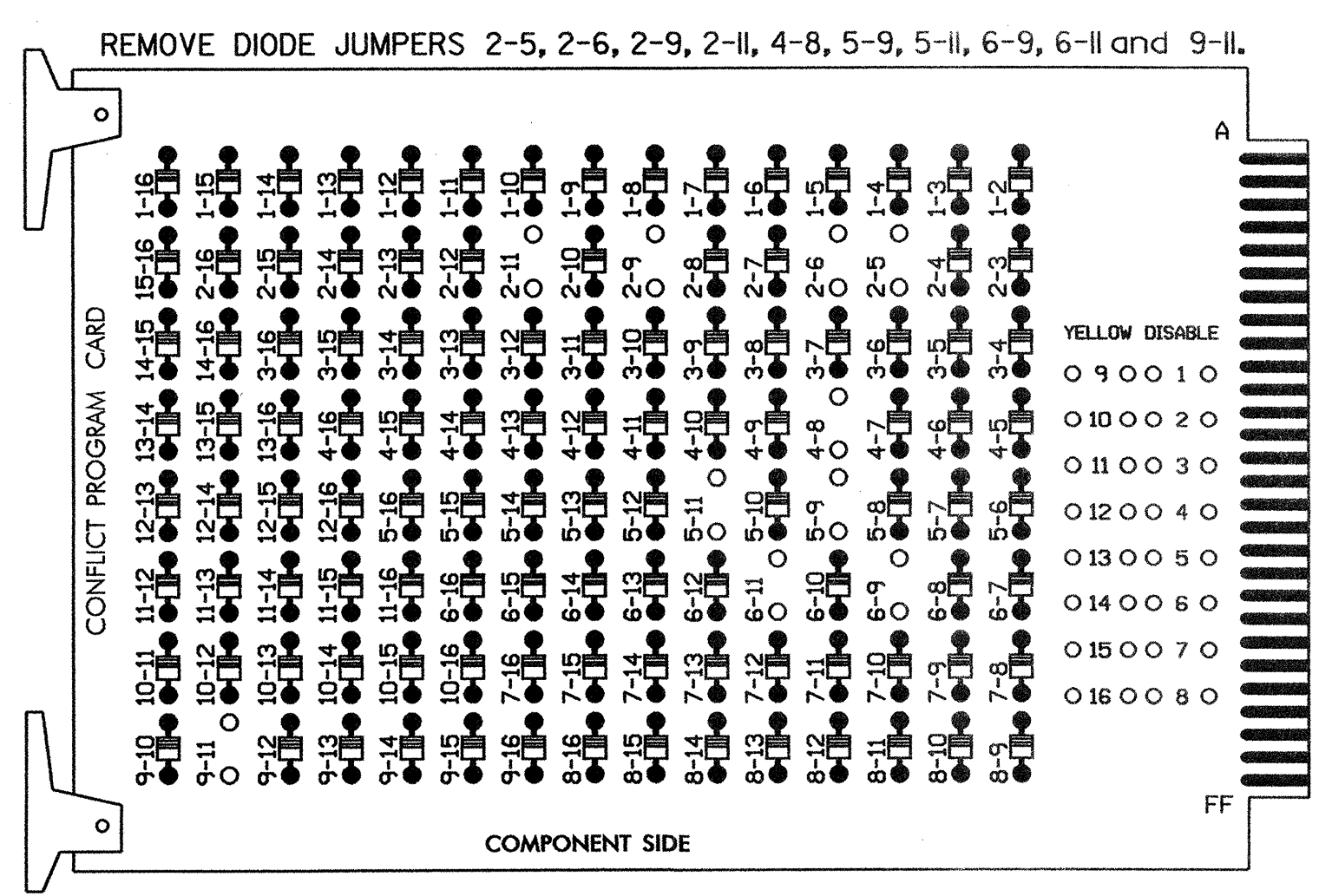
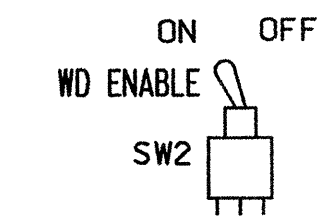




**EDI MODEL 2010ECL-NC CONFLICT MONITOR**

**PROGRAMMING DETAIL**

(remove jumpers and set switches as shown)



**NOTES:**

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

**NOTES**

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,7, 10,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 2 and 6, on the controller unit, for Start Up In Green.
- Enable Simultaneous Gap-Out, on the controller unit, for all phases.
- Program phases 4 and 8, on the controller unit, for Dual Entry.
- Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
- The cabinet and controller are part of the SR 1100 (Brawley School Rd) Closed Loop System.

**SIGNAL HEAD HOOK-UP CHART**

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P	S9	S10	S11	S12	S13	S14
PHASE	1	2	2 PED	3	4	4 PED	5*	6	6 PED	7	8	8 PED	9	10	11	12	13	14
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	42	51	62,63	NU	NU	81,82	NU	61	NU	51	NU	NU
RED		128			101			*	134			107						
YELLOW		129			102				135			108						
GREEN		130			103				136			109						
RED ARROW															A121		A114	
YELLOW ARROW								132							A122		A115	
FLASHING YELLOW ARROW															A123		A116	
GREEN ARROW								133	133									

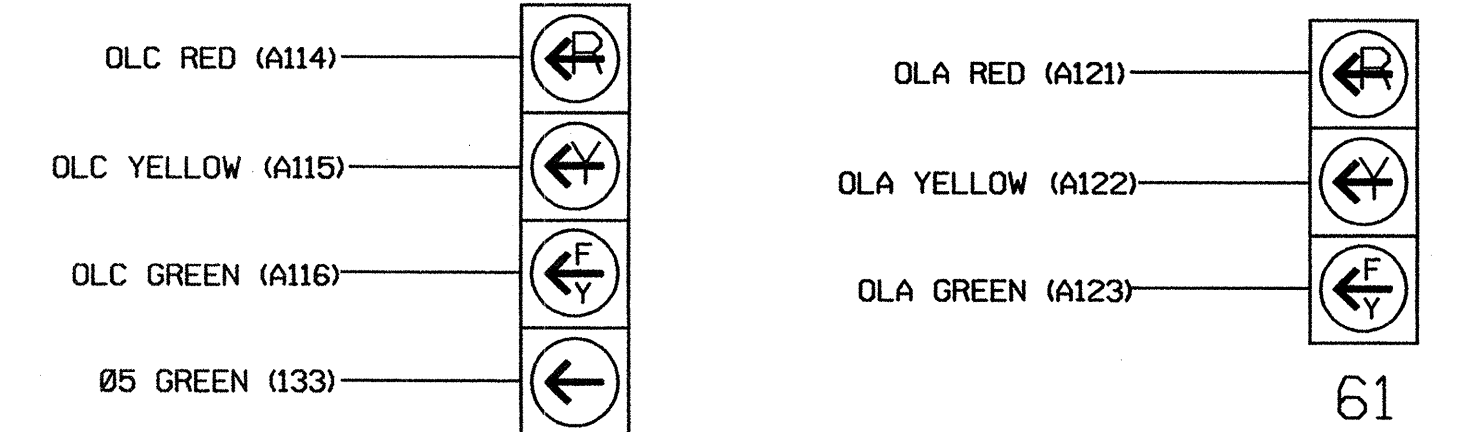
NU = Not Used  
 \* Denotes install load resistor. See load resistor installation detail this sheet.  
 \* See pictorial of head wiring in detail below.

**EQUIPMENT INFORMATION**

CONTROLLER.....CONTRACTOR SUPPLIED 2070L  
 CABINET.....CONTRACTOR SUPPLIED 332 /W/ AUX  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE  
 LOAD SWITCHES USED.....S2,S4,S5,S6,S8,S9,S12  
 PHASES USED.....2,4,5,6,8.  
 OVERLAP "A".....2+5+6  
 OVERLAP "B".....NOT USED  
 OVERLAP "C".....5+6  
 OVERLAP "D".....NOT USED

**4 SECTION FYA PPLT SIGNAL WIRING DETAIL**

(wire signal heads as shown)

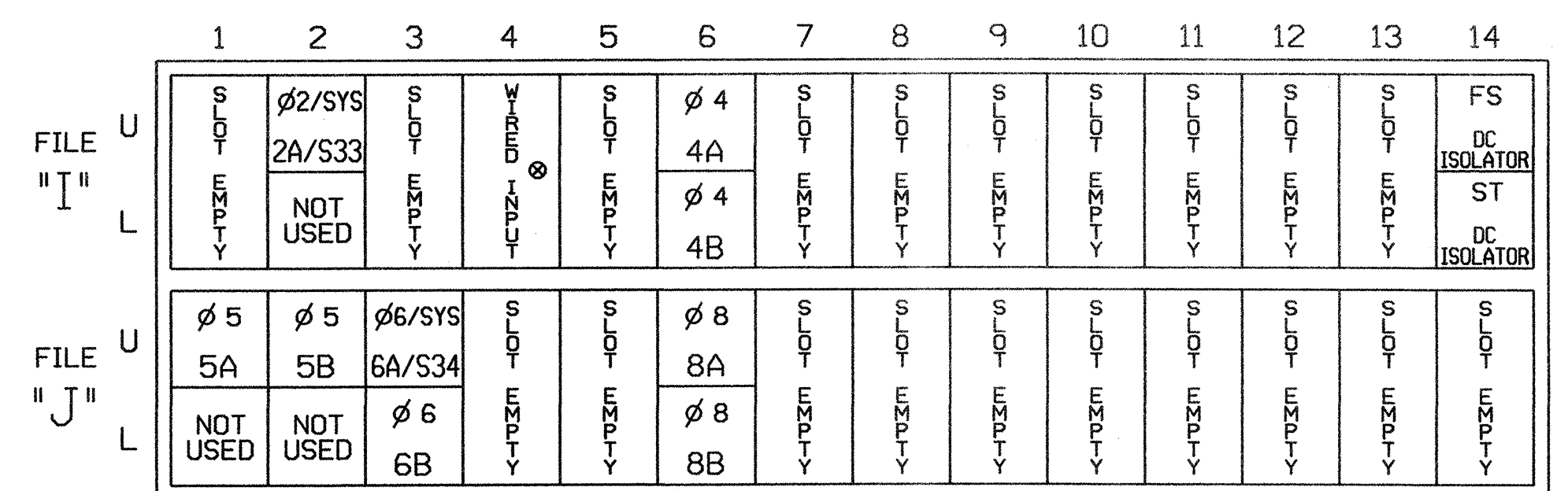


**NOTE**

- The sequence display for this signal requires special logic programming. See sheet 2 of 3 for programming instructions.

**INPUT FILE POSITION LAYOUT**

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE  
 ST = STOP TIME

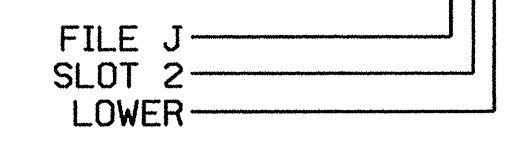
⊗ Wired Input - Do not populate slot with detector card

**INPUT FILE CONNECTION & PROGRAMMING CHART**

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A/S33	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			
5A <sup>1</sup>	TB3-1,2	J1U	55	17	5	5	Y	Y			15
		I4U	47	9	22	2	Y	Y	Y		3
5B	TB3-5,6	J2U	40	2	6	5	Y	Y			15
6A/S34	TB3-9,10	J3U	64	26	36	6/SYS	Y	Y			
6B	TB3-11,12	J3L	77	39	46	6	Y	Y	Y		3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10

<sup>1</sup>Add jumper from J1-W to I4-W, on rear of input file.

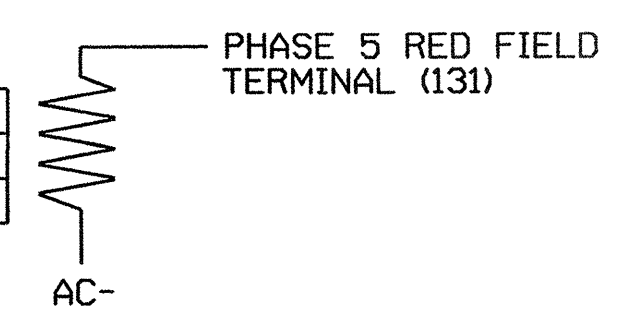
**INPUT FILE POSITION LEGEND: J2L**



**LOAD RESISTOR INSTALLATION DETAIL**

(install resistor as shown below)

VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



New Installation - Sheet 1 of 3 - Final

ELECTRICAL AND PROGRAMMING DETAILS FOR: SR 1100 (Brawley School Road) at SR 2906 (Sunfish Drive) / SR 1116 (Talbert Road)

Division 12 Iredell County Mooresville

PLAN DATE: October 2008 REVIEWED BY: JTR

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS: INIT. DATE

750 N. Greenfield Pkwy, Garner, NC 27529

SEAL: JOHN H. CARROLL, PROFESSIONAL ENGINEER, 008453

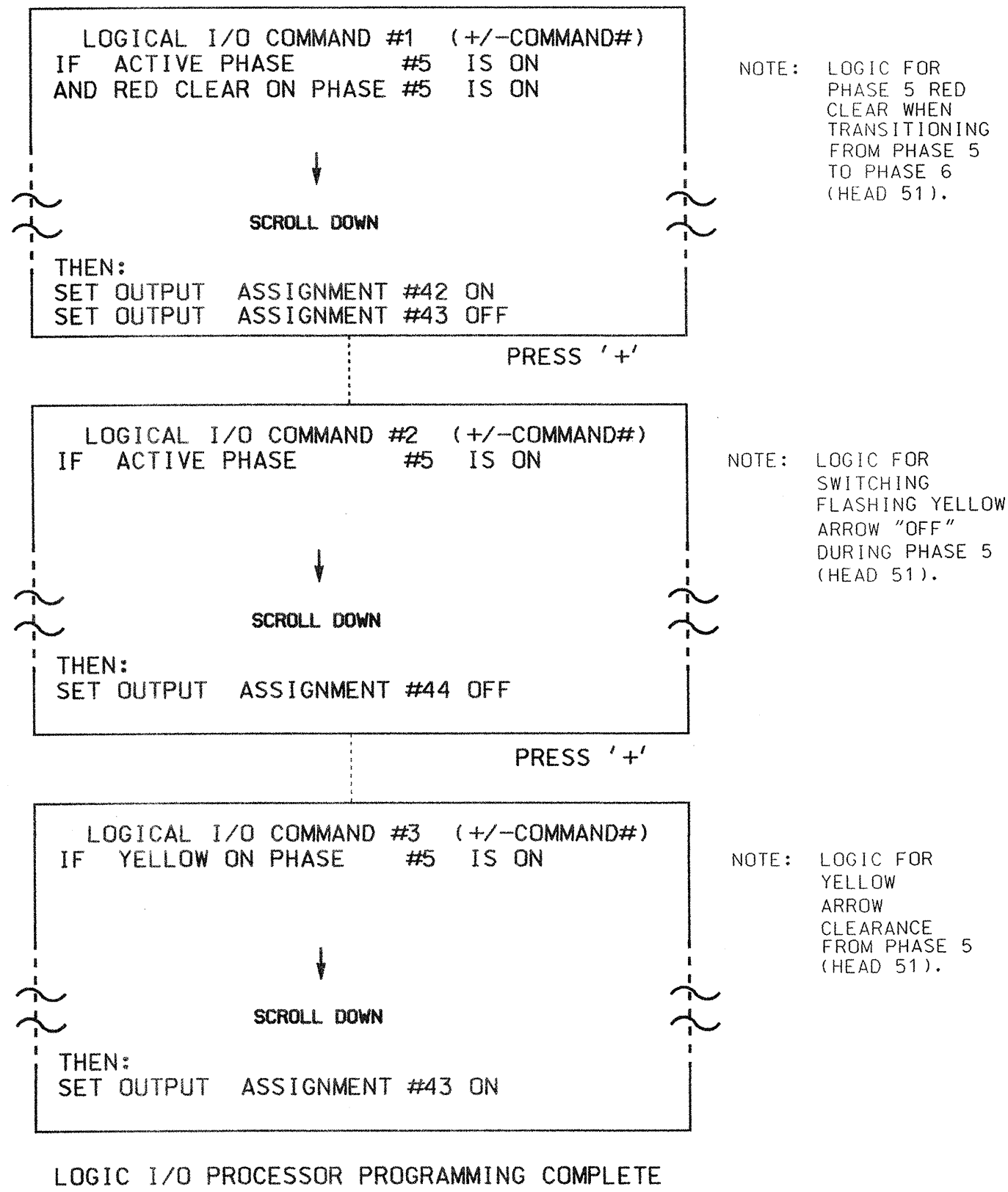
SIGNATURE: John Rowse DATE: 11-2-08

SIG. INVENTORY NO. 12-1689

### LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2 and 3.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



OUTPUT REFERENCE SCHEDULE	
OUTPUT 42	= Overlap C Red
OUTPUT 43	= Overlap C Yellow
OUTPUT 44	= Overlap C Green

### OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

PAGE 1: VEHICLE OVERLAP 'A' SETTINGS  
PHASE: 12345678910111213141516  
VEH OVL PARENTS: X XX  
VEH OVL NOT VEH:  
VEH OVL NOT PED:  
VEH OVL GRN EXT:  
STARTUP COLOR: - RED - YELLOW - GREEN  
FLASH COLORS: - RED - YELLOW X GREEN  
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)  
FLASH YELLOW IN CONTROLLER FLASH?...N  
GREEN EXTENSION (0-255 SEC)...0.0  
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0  
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0  
OUTPUT AS PHASE # (0=NONE, 1-16)...0

← NOTICE GREEN FLASH

PRESS '+' TWICE

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS  
PHASE: 12345678910111213141516  
VEH OVL PARENTS: XX  
VEH OVL NOT VEH:  
VEH OVL NOT PED:  
VEH OVL GRN EXT:  
STARTUP COLOR: - RED - YELLOW - GREEN  
FLASH COLORS: - RED - YELLOW X GREEN  
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)  
FLASH YELLOW IN CONTROLLER FLASH?...N  
GREEN EXTENSION (0-255 SEC)...0.0  
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0  
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0  
OUTPUT AS PHASE # (0=NONE, 1-16)...0

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 12-1689  
DESIGNED: September 2008  
SEALED: 10-30-08  
REVISED: N/A

Signal Upgrade - Sheet 2 of 3 - Final

	<b>SR 1100 (Brawley School Road)</b> at <b>SR 2906 (Sunfish Drive) / SR 1116 (Talbert Road)</b>	
	Division 12    Iredell County    Mooresville	PREPARED BY: James Peterson    REVIEWED BY: JTK
PLAN DATE: October 2008	REVISIONS	INIT.    DATE
PREPARED BY: James Peterson    REVIEWED BY: JTK		
750 N. Greenfield Pkwy, Garner, NC 27529		
SIGNATURE: <i>John T. Rowe</i> DATE: 11-3-08		SIG. INVENTORY NO. 12-1689

31-OCT-2008 11:33  
 s:\1116\_s\signal\work\groups\sig\_m\mhpeterson\121689\_sml\_e\_1e\_008453.dgn  
 JTPeterson



PPLT SIGNAL OUTPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL

(program controller as shown below)

NOTE: THIS PROGRAMMING APPLIES FOR OUTPUT PAGE 2 ONLY, OUTPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR ALTERNATE PHASING OPERATION.

OUTPUT ASSIGNMENTS FOR SIGNAL HEAD 51

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS), PRESS 'NEXT' FOR PAGE 2, WITH CURSOR IN "OUTPUT ASSIGNMENT#" POSITION ENTER "42"

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE PHASE' AS SHOWN BELOW.

PAGE:2 C1 PIN:88 VEHICLE OVERLAP  
 OUTPUT ASSIGNMENT #.....42  
 FREQUENCY (0=DEFAULT) (0-25.5 HZ).....0.0  
 DUTY CYCLE (0=DEFAULT) (0 - 100%).....0  
 MODE (0=SOLID,1=FLASH).....0  
 SELECT ASSIGNMENT:  
 NOT ENABLED.....Y  
 VEHICLE PHASE.....Y  
 PEDESTRIAN PHASE.....Y  
 VEHICLE OVERLAP.....Y  
 PEDESTRIAN OVERLAP.....Y  
 WATCHDOG.....  
 DETECTOR RESET.....  
 ADVANCE BEACON.....  
 OUT OF PHASE FLASHER.....  
 CONTROLLER FLASH.....  
 RUN FREE.....  
 RESERVED.....  
 PREEMPT.....  
 SOFT PREEMPT.....  
 ANY PREEMPT.....  
 COORDINATION PLAN.....  
 OFFSET.....  
 PHASE CHECK.....  
 PHASE ON.....  
 PHASE NEXT.....

ENTER A "Y" FOR VEHICLE PHASE.  
 THE OUTPUT IS SET AS AN OVERLAP BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.

PAGE:2 C1 PIN:88 VEHICLE OVERLAP  
 SELECT VEHICLE PHASE (1-16).....5  
 SELECT COLOR(0=RED,1=YEL,2=GRN).....0

WHEN A 'Y' IS ENTERED FOR 'VEHICLE PHASE' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.  
 PRESS THE 'ENT' KEY AFTER INPUTING DATA, THEN 'ESC'.

PRESS "4" KEY FOR OUTPUT 43

PAGE:2 C1 PIN:88 VEHICLE PHASE  
 OUTPUT ASSIGNMENT #.....42  
 FREQUENCY (0=DEFAULT) (0-25.5 HZ).....0.0  
 DUTY CYCLE (0=DEFAULT) (0 - 100%).....0  
 MODE (0=SOLID,1=FLASH).....0  
 SELECT ASSIGNMENT:  
 NOT ENABLED.....Y  
 VEHICLE PHASE.....Y  
 PEDESTRIAN PHASE.....Y  
 VEHICLE OVERLAP.....Y  
 PEDESTRIAN OVERLAP.....Y  
 WATCHDOG.....  
 DETECTOR RESET.....  
 ADVANCE BEACON.....  
 OUT OF PHASE FLASHER.....  
 CONTROLLER FLASH.....  
 RUN FREE.....  
 RESERVED.....  
 PREEMPT.....  
 SOFT PREEMPT.....  
 ANY PREEMPT.....  
 COORDINATION PLAN.....  
 OFFSET.....  
 PHASE CHECK.....  
 PHASE ON.....  
 PHASE NEXT.....

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE PHASE' AS SHOWN BELOW.

PAGE:2 C1 PIN:89 VEHICLE OVERLAP  
 OUTPUT ASSIGNMENT #.....43  
 FREQUENCY (0=DEFAULT) (0-25.5 HZ).....0.0  
 DUTY CYCLE (0=DEFAULT) (0 - 100%).....0  
 MODE (0=SOLID,1=FLASH).....0  
 SELECT ASSIGNMENT:  
 NOT ENABLED.....Y  
 VEHICLE PHASE.....Y  
 PEDESTRIAN PHASE.....Y  
 VEHICLE OVERLAP.....Y  
 PEDESTRIAN OVERLAP.....Y  
 WATCHDOG.....  
 DETECTOR RESET.....  
 ADVANCE BEACON.....  
 OUT OF PHASE FLASHER.....  
 CONTROLLER FLASH.....  
 RUN FREE.....  
 RESERVED.....  
 PREEMPT.....  
 SOFT PREEMPT.....  
 ANY PREEMPT.....  
 COORDINATION PLAN.....  
 OFFSET.....  
 PHASE CHECK.....  
 PHASE ON.....  
 PHASE NEXT.....

ENTER A "Y" FOR VEHICLE PHASE.  
 THE OUTPUT IS SET AS AN OVERLAP BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.

PAGE:2 C1 PIN:89 VEHICLE OVERLAP  
 SELECT VEHICLE PHASE (1-16).....5  
 SELECT COLOR(0=RED,1=YEL,2=GRN).....1

WHEN A 'Y' IS ENTERED FOR 'VEHICLE PHASE' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.  
 PRESS THE 'ENT' KEY AFTER INPUTING DATA, THEN 'ESC'.

PRESS "4" KEY FOR OUTPUT 44

PAGE:2 C1 PIN:89 VEHICLE PHASE  
 OUTPUT ASSIGNMENT #.....43  
 FREQUENCY (0=DEFAULT) (0-25.5 HZ).....0.0  
 DUTY CYCLE (0=DEFAULT) (0 - 100%).....0  
 MODE (0=SOLID,1=FLASH).....0  
 SELECT ASSIGNMENT:  
 NOT ENABLED.....Y  
 VEHICLE PHASE.....Y  
 PEDESTRIAN PHASE.....Y  
 VEHICLE OVERLAP.....Y  
 PEDESTRIAN OVERLAP.....Y  
 WATCHDOG.....  
 DETECTOR RESET.....  
 ADVANCE BEACON.....  
 OUT OF PHASE FLASHER.....  
 CONTROLLER FLASH.....  
 RUN FREE.....  
 RESERVED.....  
 PREEMPT.....  
 SOFT PREEMPT.....  
 ANY PREEMPT.....  
 COORDINATION PLAN.....  
 OFFSET.....  
 PHASE CHECK.....  
 PHASE ON.....  
 PHASE NEXT.....

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'NOT ENABLED' AS SHOWN BELOW.

PAGE:2 C1 PIN:90 VEHICLE OVERLAP  
 OUTPUT ASSIGNMENT #.....44  
 FREQUENCY (0=DEFAULT) (0-25.5 HZ).....0.0  
 DUTY CYCLE (0=DEFAULT) (0 - 100%).....0  
 MODE (0=SOLID,1=FLASH).....0  
 SELECT ASSIGNMENT:  
 NOT ENABLED.....Y  
 VEHICLE PHASE.....Y  
 PEDESTRIAN PHASE.....Y  
 VEHICLE OVERLAP.....Y  
 PEDESTRIAN OVERLAP.....Y  
 WATCHDOG.....  
 DETECTOR RESET.....  
 ADVANCE BEACON.....  
 OUT OF PHASE FLASHER.....  
 CONTROLLER FLASH.....  
 RUN FREE.....  
 RESERVED.....  
 PREEMPT.....  
 SOFT PREEMPT.....  
 ANY PREEMPT.....  
 COORDINATION PLAN.....  
 OFFSET.....  
 PHASE CHECK.....  
 PHASE ON.....  
 PHASE NEXT.....

ENTER A "Y" FOR NOT ENABLED (THIS WILL DISABLE THE OUTPUT)  
 THE OUTPUT IS SET AS AN OVERLAP BY DEFAULT. THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.

PAGE:2 C1 PIN:90 NOT ENABLED  
 OUTPUT ASSIGNMENT #.....44  
 FREQUENCY (0=DEFAULT) (0-25.5 HZ).....0.0  
 DUTY CYCLE (0=DEFAULT) (0 - 100%).....0  
 MODE (0=SOLID,1=FLASH).....0  
 SELECT ASSIGNMENT:  
 NOT ENABLED.....Y  
 VEHICLE PHASE.....Y  
 PEDESTRIAN PHASE.....Y  
 VEHICLE OVERLAP.....Y  
 PEDESTRIAN OVERLAP.....Y  
 WATCHDOG.....  
 DETECTOR RESET.....  
 ADVANCE BEACON.....  
 OUT OF PHASE FLASHER.....  
 CONTROLLER FLASH.....  
 RUN FREE.....  
 RESERVED.....  
 PREEMPT.....  
 SOFT PREEMPT.....  
 ANY PREEMPT.....  
 COORDINATION PLAN.....  
 OFFSET.....  
 PHASE CHECK.....  
 PHASE ON.....  
 PHASE NEXT.....

STEP 1

STEP 2

STEP 3

TOD EVENT SCHEDULING PROGRAMMING DETAIL

TO CALL ALTERNATE PHASING OPERATION

(program controller as shown below)

\* DENOTES TO BE DETERMINED BY THE DIVISION TRAFFIC ENGINEER.

ALL EVENTS SHOWN BELOW SHALL BE PROGRAMMED TO START AND STOP ON THE SAME TIMES AND DATES.

FROM MAIN MENU PRESS 'B' (SCHEDULING),

NOTE THAT THE TOP LINE WILL CHANGE FROM "NOT ASSIGNED" TO SPECIFIED FUNCTION WHEN EVENT IS ASSIGNED AS SHOWN.

SCHEDULED EVENT #1 OUTPUT PAGE CHANGE  
 START DATE (MM/DD).....\*\*/\*\*  
 END DATE (MM/DD).....\*\*/\*\*  
 START TIME (HH:MM).....\*\*:\*\*  
 STOP TIME (HH:MM).....\*\*:\*\*  
 DOW [SUN MON TUE WED THR FRI SAT].....\*\*:\*\*  
 ENABLED 1 \* \* \* \* \*  
 EVENT GROUPS |12345678910111213141516|  
 ASSIGNED  
 DELETE EVENT WHEN COMPLETED?.....N  
 CONTINUOUS EVENT?.....N  
 INVERT EVENT?.....N  
 SELECT 1 EVENT TYPE:  
 EVENT GROUP (1-16).....  
 PLAN (65=FLSH,66=FREE)..... OFFSET#.....  
 PLAN PRIORITY: LOW... MED... HIGH...  
 CHANGE PHASE SEQUENCE PAGE (1-12).....  
 CHANGE PHASE TIMING PAGE (1-4).....  
 CHANGE PHASE CONTROL PAGE (1-4).....  
 CHANGE OVERLAP CONTROL PAGE (1-4).....  
 CHANGE INPUT PAGE (1-4).....  
 CHANGE OUTPUT PAGE (1-4).....2  
 SET OUTPUT ON (1-64).....  
 SET OUTPUT OFF (1-64).....  
 SET INPUT ON (1-64).....  
 SET INPUT OFF (1-64).....  
 ENABLE FAILURES LOG?.....  
 ENABLE EVENTS LOG?.....  
 ENABLE DATA ENTRIES LOG?.....  
 ENABLE COORDINATION PLANS LOG?.....  
 ENABLE SPECIAL FUNCTIONS LOG?.....  
 ENABLE SLIT MONITOR LOG?.....  
 ENABLE DETECTOR DATA LOG?.....  
 ENABLE DETECTOR (1-64).....  
 ENABLE DETECTOR DIAGNOSTICS (1-64).....  
 DISABLE DET STRETCH / DELAY (1-64).....  
 DISABLE DET STOP BAR MODE (1-64).....  
 SET LOGIC FLAG ON (1-64).....  
 SET LOGIC FLAG OFF (1-64).....  
 OVERRIDE PHASE CONTROL FUNCTIONS?.....

PRESS "4" FOR NEXT EVENT

SCHEDULED EVENT #3 INPUT OVERRIDE  
 START DATE (MM/DD).....\*\*/\*\*  
 END DATE (MM/DD).....\*\*/\*\*  
 START TIME (HH:MM).....\*\*:\*\*  
 STOP TIME (HH:MM).....\*\*:\*\*  
 DOW [SUN MON TUE WED THR FRI SAT].....\*\*:\*\*  
 ENABLED 1 \* \* \* \* \*  
 EVENT GROUPS |12345678910111213141516|  
 ASSIGNED  
 DELETE EVENT WHEN COMPLETED?.....N  
 CONTINUOUS EVENT?.....N  
 INVERT EVENT?.....N  
 SELECT 1 EVENT TYPE:  
 EVENT GROUP (1-16).....  
 PLAN (65=FLSH,66=FREE)..... OFFSET#.....  
 PLAN PRIORITY: LOW... MED... HIGH...  
 CHANGE PHASE SEQUENCE PAGE (1-12).....  
 CHANGE PHASE TIMING PAGE (1-4).....  
 CHANGE PHASE CONTROL PAGE (1-4).....  
 CHANGE OVERLAP CONTROL PAGE (1-4).....  
 CHANGE INPUT PAGE (1-4).....  
 CHANGE OUTPUT PAGE (1-4).....  
 SET OUTPUT ON (1-64).....  
 SET OUTPUT OFF (1-64).....  
 SET INPUT ON (1-64).....  
 SET INPUT OFF (1-64).....9  
 ENABLE FAILURES LOG?.....  
 ENABLE EVENTS LOG?.....  
 ENABLE DATA ENTRIES LOG?.....  
 ENABLE COORDINATION PLANS LOG?.....  
 ENABLE SPECIAL FUNCTIONS LOG?.....  
 ENABLE SLIT MONITOR LOG?.....  
 ENABLE DETECTOR DATA LOG?.....  
 ENABLE DETECTOR (1-64).....  
 ENABLE DETECTOR DIAGNOSTICS (1-64).....  
 DISABLE DET STRETCH / DELAY (1-64).....5  
 DISABLE DET STOP BAR MODE (1-64).....  
 SET LOGIC FLAG ON (1-64).....  
 SET LOGIC FLAG OFF (1-64).....  
 OVERRIDE PHASE CONTROL FUNCTIONS?.....

PRESS "4" FOR NEXT EVENT

SCHEDULED EVENT #5 DETECTOR CONTROL  
 START DATE (MM/DD).....\*\*/\*\*  
 END DATE (MM/DD).....\*\*/\*\*  
 START TIME (HH:MM).....\*\*:\*\*  
 STOP TIME (HH:MM).....\*\*:\*\*  
 DOW [SUN MON TUE WED THR FRI SAT].....\*\*:\*\*  
 ENABLED 1 \* \* \* \* \*  
 EVENT GROUPS |12345678910111213141516|  
 ASSIGNED  
 DELETE EVENT WHEN COMPLETED?.....N  
 CONTINUOUS EVENT?.....N  
 INVERT EVENT?.....N  
 SELECT 1 EVENT TYPE:  
 EVENT GROUP (1-16).....  
 PLAN (65=FLSH,66=FREE)..... OFFSET#.....  
 PLAN PRIORITY: LOW... MED... HIGH...  
 CHANGE PHASE SEQUENCE PAGE (1-12).....  
 CHANGE PHASE TIMING PAGE (1-4).....  
 CHANGE PHASE CONTROL PAGE (1-4).....  
 CHANGE OVERLAP CONTROL PAGE (1-4).....  
 CHANGE INPUT PAGE (1-4).....  
 CHANGE OUTPUT PAGE (1-4).....  
 SET OUTPUT ON (1-64).....  
 SET OUTPUT OFF (1-64).....  
 SET INPUT ON (1-64).....  
 SET INPUT OFF (1-64).....  
 ENABLE FAILURES LOG?.....  
 ENABLE EVENTS LOG?.....  
 ENABLE DATA ENTRIES LOG?.....  
 ENABLE COORDINATION PLANS LOG?.....  
 ENABLE SPECIAL FUNCTIONS LOG?.....  
 ENABLE SLIT MONITOR LOG?.....  
 ENABLE DETECTOR DATA LOG?.....  
 ENABLE DETECTOR (1-64).....  
 ENABLE DETECTOR DIAGNOSTICS (1-64).....  
 DISABLE DET STRETCH / DELAY (1-64).....5  
 DISABLE DET STOP BAR MODE (1-64).....  
 SET LOGIC FLAG ON (1-64).....  
 SET LOGIC FLAG OFF (1-64).....  
 OVERRIDE PHASE CONTROL FUNCTIONS?.....

TOD PROGRAMMING COMPLETE

ALTERNATE PHASING NOTES

THIS EVENT SCHEDULING DETAIL SHOWS THE TOD PROGRAMMING STEPS NECESSARY FOR THE CONTROLLER TO OPERATE THE "ALTERNATE PHASING" AS SHOWN ON THE SIGNAL PLANS.

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN THESE TOD EVENTS ACTIVATE TO CALL THE "ALTERNATE PHASING":

EVENT NO.

1. OUPUT PAGE 2 IS CALLED: Modifies control circuits for signal head 51.
2. INPUT 9 IS SWITCHED OFF: Disables phase 2 call on loop 5A.
3. DELAY IS DISABLED FOR DETECTOR 5 (Phase 5, Loop 5A).

Signal Upgrade - Sheet 3 of 3 - Final

NOTE: THE OUTPUT ASSIGNMENT CHANGES, SHOWN ABOVE, ARE NECESSARY FOR THE TIME OF DAY OPERATION OF SIGNAL HEAD 51. IN ALTERNATE PHASING (PROTECTED ONLY) OPERATION, THE RED ARROW CONTROL IS SWITCHED TO THE LEFT TURN PHASE RED. THE SOLID YELLOW ARROW CONTROL IS SWITCHED TO THE LEFT TURN PHASE YELLOW. IN ADDITION, THE FLASHING YELLOW ARROW IS SWITCHED OFF BY DISABLING THE OVERLAP GREEN OUTPUT.  
 ALL OF THESE OUTPUT CHANGES ARE ACCOMPLISHED ON OUTPUT PAGE 2. THEREFORE IN ALTERNATE PHASING (PROTECTED ONLY) MODE, THE PAGE IS SWITCHED TO "2" BY THE CONTROLLER TOD EVENT SCHEDULING.  
 IN NORMAL PHASING (PPLT) MODE THE STANDARD, DEFAULT, OUPUT ASSIGNMENTS ARE USED WHICH ARE DESIGNATED ON OUTPUT PAGE 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 12-1689  
 DESIGNED: September 2008  
 SEALED: 10-30-08  
 REVISED: N/A

Electrical and Programming Details For: SR 1100 (Brawley School Road) at SR 2906 (Sunfish Drive) / SR 1116 (Talbert Road)

Prepared in the Offices of: [Logo]

Division 12 Iredell County Mooresville

PLAN DATE: October 2008 REVIEWED BY: JTR

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS INIT. DATE

SEAL: [Professional Engineer Seal]

SIGNATURE: [Signature] DATE: 11-3-08

SIG. INVENTORY NO. 12-1689

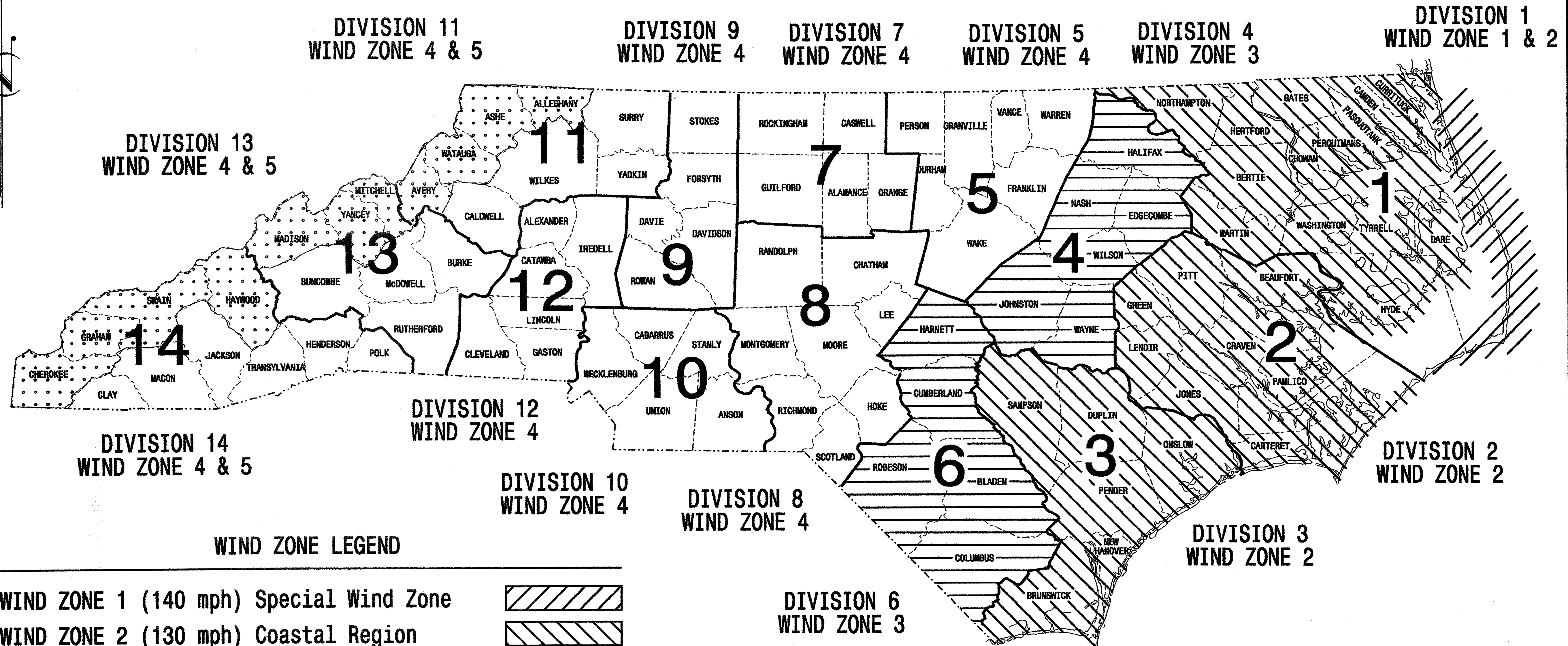
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# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

STATE	PROJECT NO.	SHEET NO.
N.C.	R-3833B	Sig. 20
F. A. PROJ. NO.	M 1	
PROJECT ID. NO.		

## STANDARD DRAWINGS FOR METAL POLES

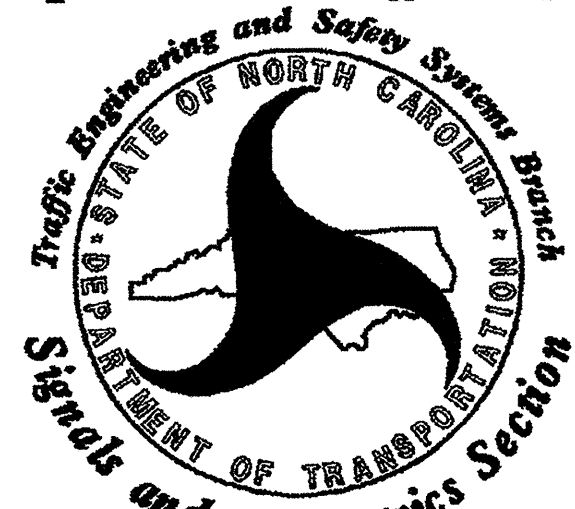


**WIND ZONE LEGEND**

WIND ZONE 1 (140 mph) Special Wind Zone	
WIND ZONE 2 (130 mph) Coastal Region	
WIND ZONE 3 (110 mph) Eastern Region	
WIND ZONE 4 (90 mph) Central & Mtn. Region	
WIND ZONE 5 (120 mph) Special Wind Zone	

<http://www.ncdot.org/doh/preconstruct/traffic/tmssu/ws/default.htm>

Prepared in the Offices of:



122 N. McDowell St., Raleigh, NC 27603

Designed in conformance with the 2002 Interim to the 4th Edition 2001

**AASHTO**

Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals

**INDEX OF PLANS**

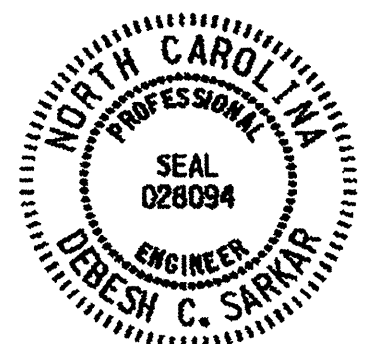
DRAWING NUMBER	DESCRIPTION
M 1	Title Sheet
M 2	Fabrication Details - All Poles
M 3	Fabrication Details - Strain Poles
M 4,5	Fabrication Details - Mast Arm Poles
M 6	Construction Details - Strain Poles
M 7	Construction Details - Foundations
M 8	Standard Strain Poles

**NCDOT CONTACTS:**

**TRAFFIC ENGINEERING AND SAFETY SYSTEMS BRANCH**

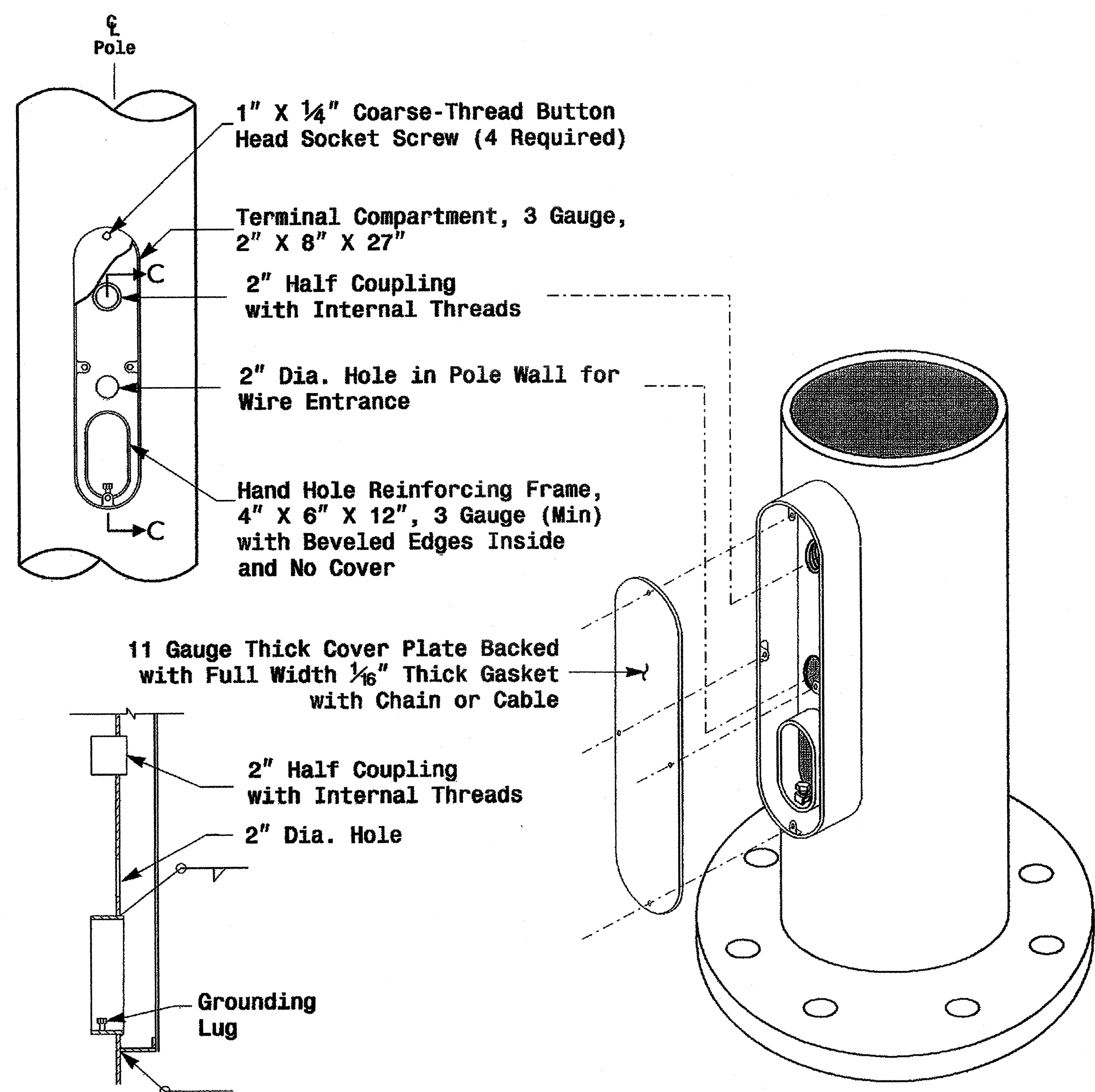
- G. A. Fuller, P.E. - State ITS and Signals Engineer
- R. E. Mullinax, P.E. - Signals and Geometrics Engineer
- P. L. Alexander, P.E. - Signals and Geometrics Special Projects Engineer
- D. C. Sarkar, P.E. - Signals and Geometrics Structural Engineer
- A. M. Esposito, P.E. - Signals and Geometrics Project Engineer
- C. F. Andrews, Jr. - Signals and Geometrics Project Engineer

SEAL



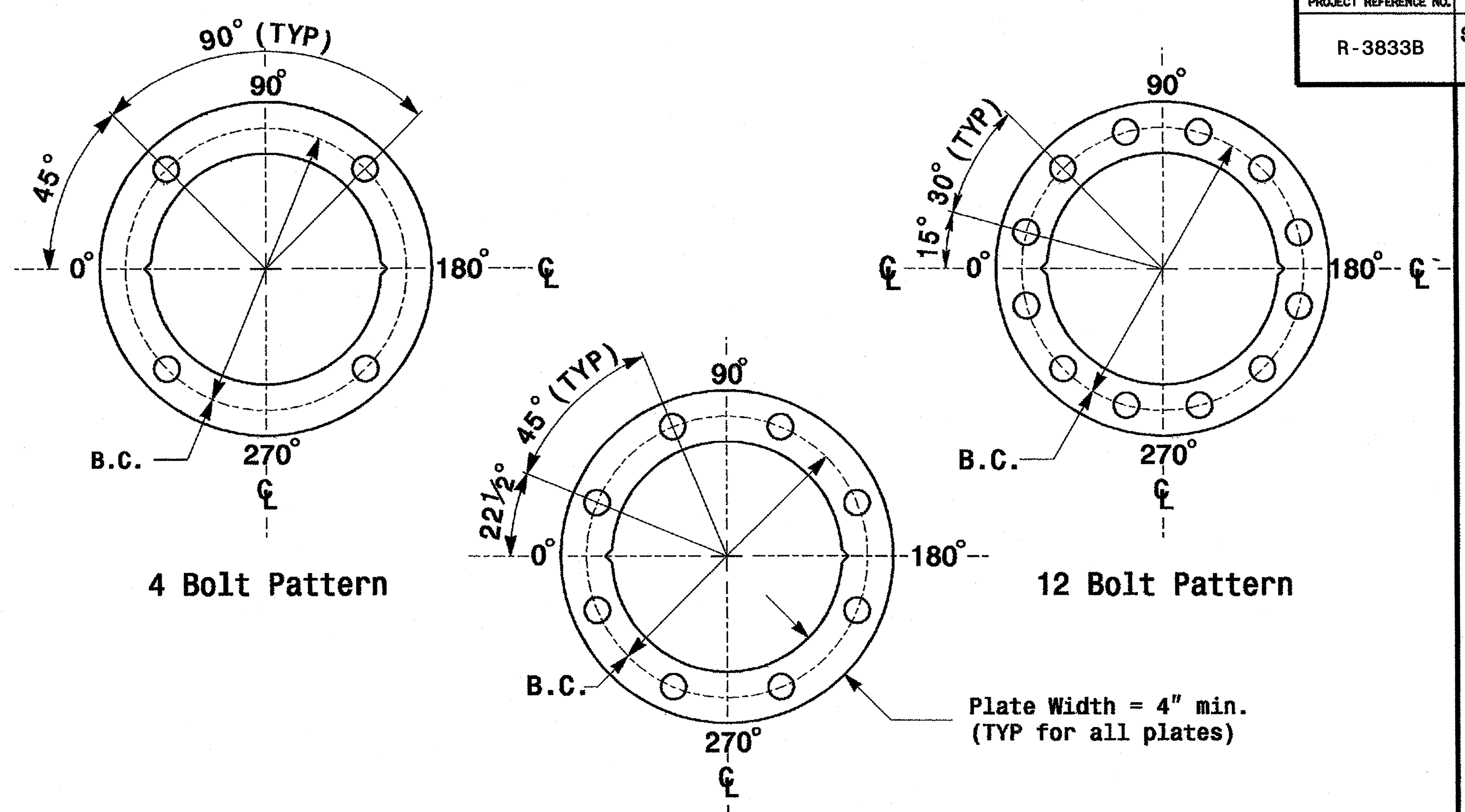
*D. Sarkar* 9.2.2005  
SIGNATURE DATE





Section C-C Note: Unless otherwise specified, locate Terminal Compartment 1 foot above the pole base plate at 180 degrees on the pole's radial index.

**Terminal Compartment Detail**



Construct Templates and Plates from 1/4" min. thick Steel. Galvanizing is not required.  
**Base Plate Template and Anchor Bolt Lock Plate Details**

MFG _____	MFG. DATE: MM/YY _____
SHAFT D/T/L/Y _____	
ARM-A D/T/L/Y _____	
ARM-B D/T/L/Y _____	
A.B. DIA./B.C./L/Y _____	
NCDOT STANDARD _____	

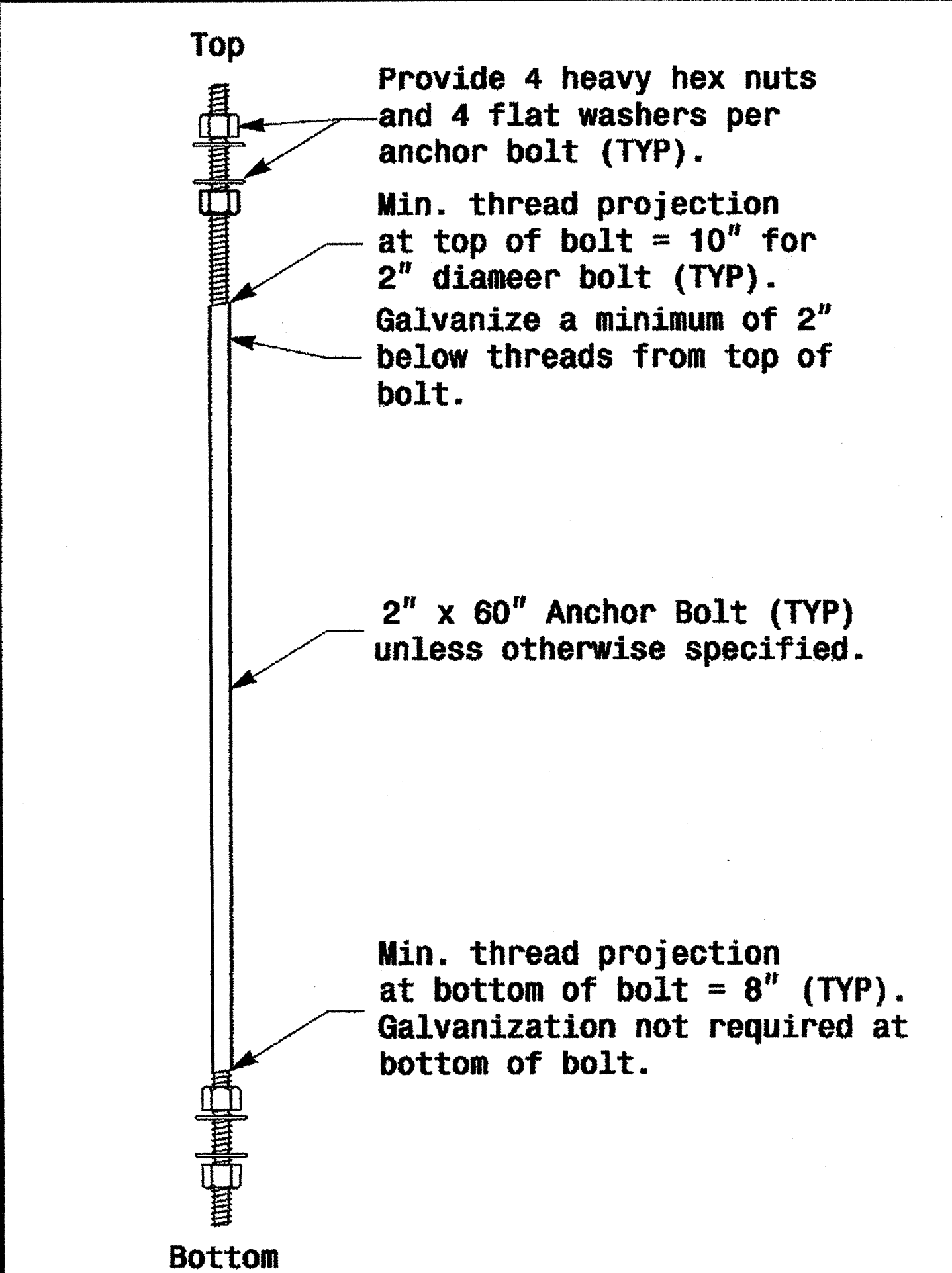
**Shaft I.D. Tag**  
 (Provide on Strain Poles and Mast Arm Poles)

MFG _____	MFG. DATE: MM/YY _____
SECTION D/T/L/Y _____	
NCDOT STANDARD _____	

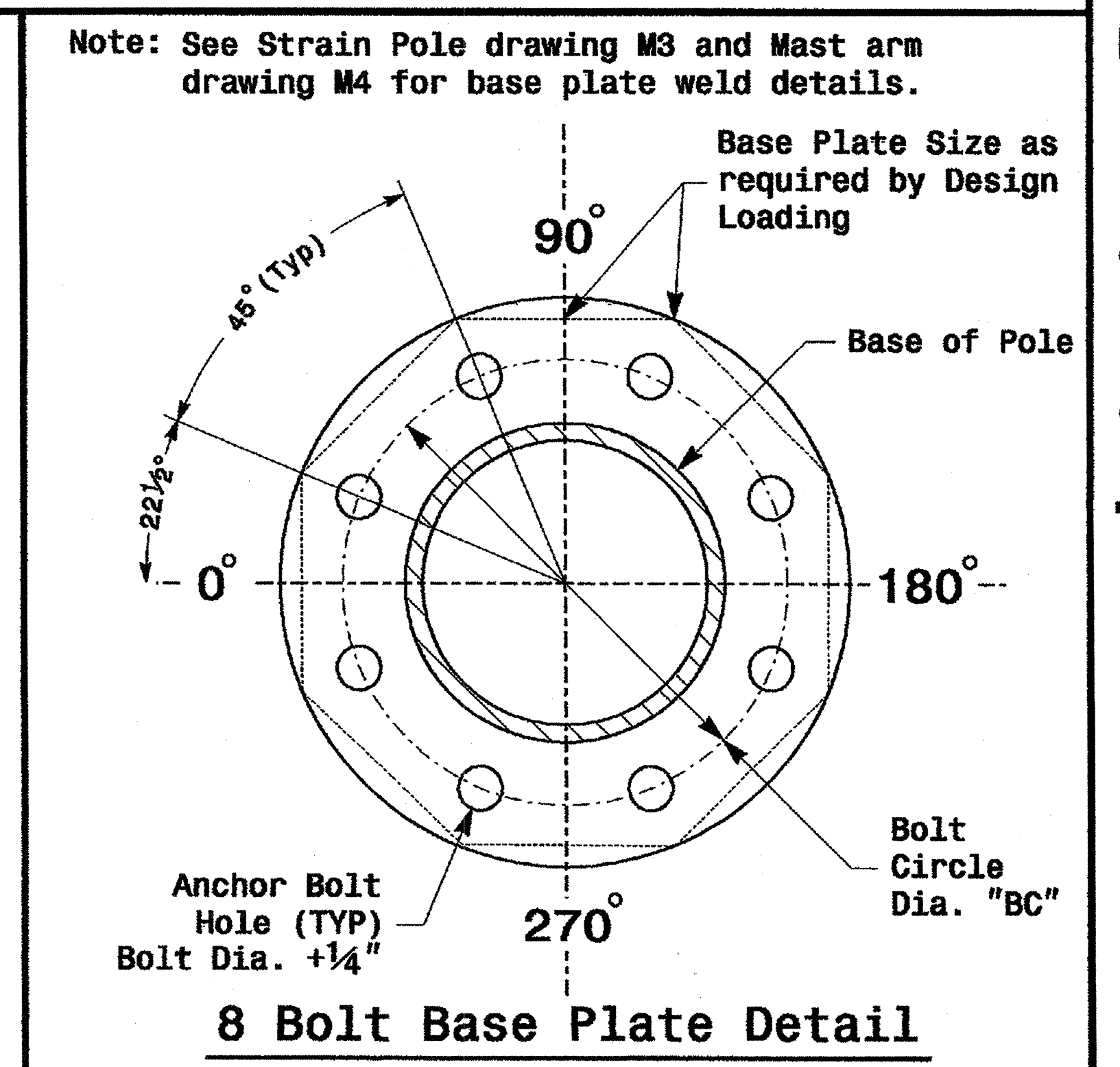
**Arm I.D. Tag**  
 (Provide on each section of a multi-section mast arm)

- Notes:
- 1) D= Diameter, T= Thickness, L= Length, Y= Yield Strength
  - 2) A.B. = Anchor Bolt
  - 3) B.C. = Bolt Circle of Anchor Bolts
  - 4) If Custom Design, use "NCDOT STANDARD" line for plan pole I.D.
  - 5) See drawing M4 for mounting positions of I.D. tags.

**Identification Tag Details**



**Anchor Bolt Detail**



**8 Bolt Base Plate Detail**

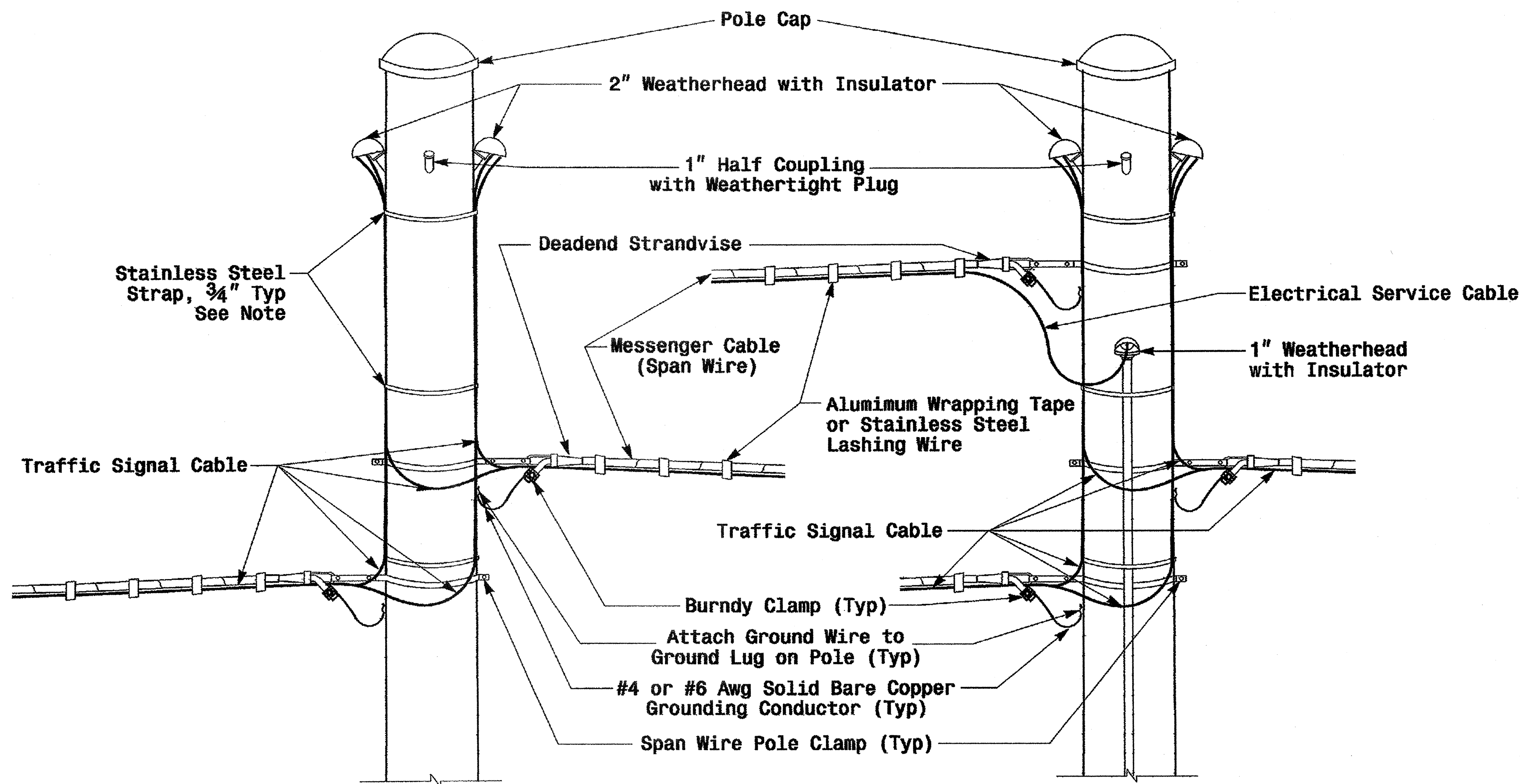
	<b>Typical Fabrication Details</b> Common To All Metal Poles		
	PLAN DATE: <b>May 2005</b>	REVIEWED BY: <b>G.F. Andrews</b>	
PREPARED BY: <b>P.L. Alexander</b>	REVIEWED BY: <b>A.M. Esposito</b>	REVISIONS	SIGNATURE <b>D. Sankar</b>
SCALE 0 NA NONE	DATE	DATE	DATE <b>9.2.2005</b>
222 N. McDowell St., Raleigh, NC 27603			SIG. INVENTORY NO.

**Fabrication Details - All Poles**

01-SEP-2005 18:22 D:\2004\_Metal Pole Standard.dwg004.mcf 1111.u mf.dgn

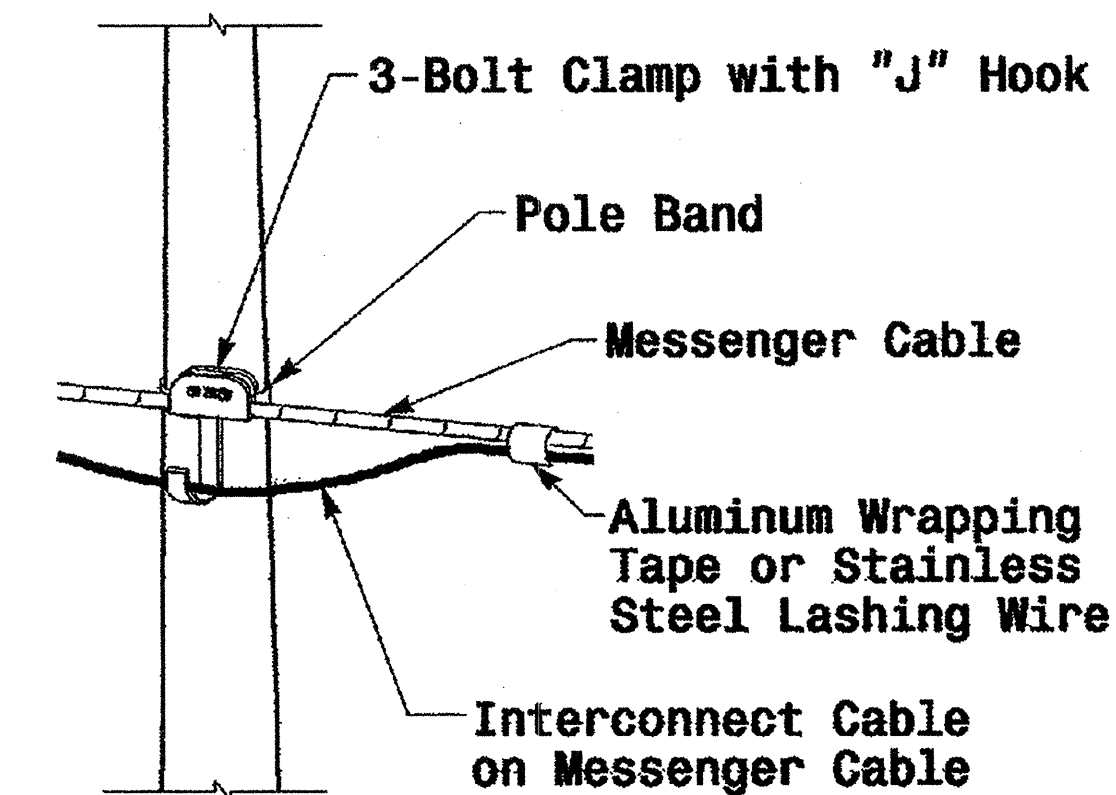




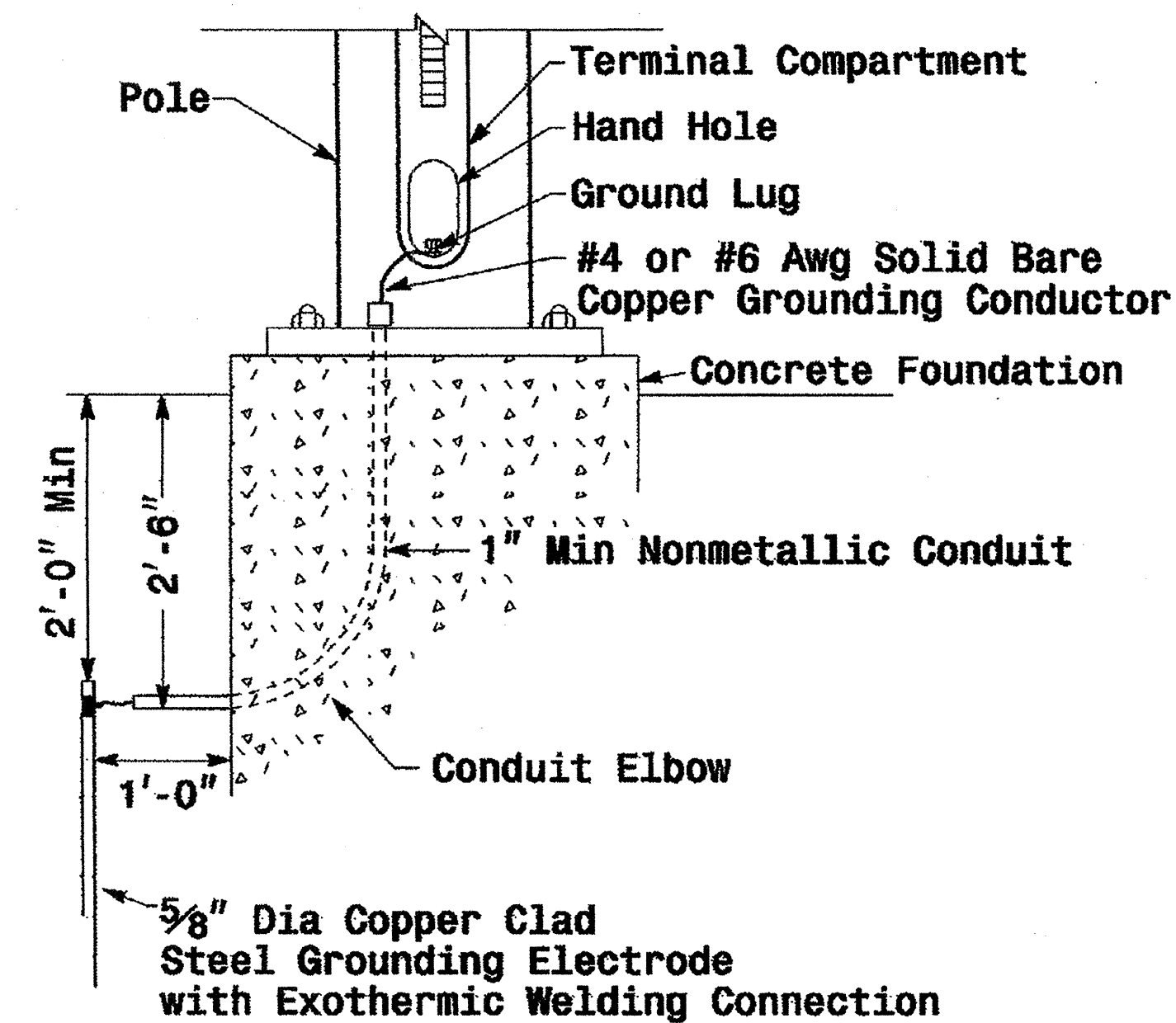


Note: Strap all signal cables to the side of the pole with 3/4\"/>

**Strain Pole Attachments**




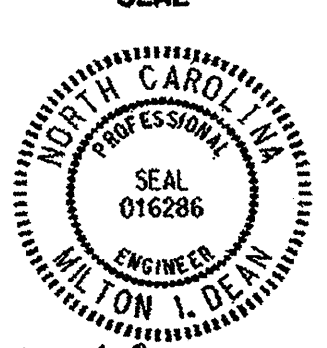
**Attachment of Cable to Intermediate Metal Pole**



**Metal Pole Grounding Detail**

**Construction Details - Strain Poles**

01-SEP-2005 16:13 w:\p001\es-un\1\mwr\gr-coupa2004.mer\1 pole standard.dwg2004.m6.dgn p01 alexander

	<b>Construction Details Strain Poles</b>		
	PLAN DATE: <b>May 2005</b> PREPARED BY: <b>G.F. ANDREWS</b>	REVIEWED BY: <b>P.L. ALEXANDER</b> REVIEWED BY: <b>D.C. SARKAR</b>	
222 N. McDowell St., Raleigh, NC 27603		REVISIONS:	INIT. DATE <i>P.L. Alexander</i> 9-1-05 SIGNATURE DATE SIG. INVENTORY NO.





		STANDARD STRAIN POLES				STANDARD FOUNDATIONS 42" Diameter Drilled Pier Length (L) - Feet						
		Case No.	Pole Height (Ft.)	Base Plate BC (In.)	Moment at the Pole Base (ft-kp)	Clay				Sand		
						Medium N-Value 4-8	Stiff N-Value 9-15	Very Stiff N-Value 16-30	Hard N-Value >30	Loose N-Value 4-10	Medium N-Value 11-30	Dense N-Value >30
WIND ZONE 1	LIGHT	S26L3	26	25	280	20.5	14.0	11.5	9.5	18.0	16.0	14.0
		S30L3	30	25	310	21.0	14.5	11.5	9.5	18.5	16.5	14.5
		S35L3	35	25	350	22.5	15.0	12.0	10.0	19.5	17.5	15.5
	HEAVY	S30H3	30	29	450	25.5	16.5	13.0	11.0	21.0	18.5	16.5
		S35H3	35	29	540	26.0	17.0	13.5	11.5	22.0	19.5	17.0
WIND ZONE 2	LIGHT	S26L2	26	23	250	19.5	13.5	11.0	9.0	18.0	15.5	14.0
		S30L2	30	23	290	20.0	14.0	11.5	9.5	18.5	16.0	14.0
		S35L2	35	23	315	21.0	14.5	11.5	9.5	19.0	16.5	14.5
	HEAVY	S30H2	30	29	415	24.5	16.0	13.0	10.5	21.0	18.5	16.0
		S35H2	35	29	485	25.5	16.5	13.5	11.0	21.5	19.0	16.5
WIND ZONE 3	LIGHT	S26L2	26	23	250	18.5	13.0	10.5	9.0	17.5	15.0	13.5
		S30L2	30	23	290	19.5	13.5	11.0	9.0	18.0	15.5	14.0
		S35L2	35	23	315	20.0	14.0	11.5	9.5	18.5	16.0	14.5
	HEAVY	S30H2	30	29	415	23.0	15.5	12.5	10.0	20.5	17.5	16.0
		S35H2	35	29	485	24.0	16.0	13.0	10.5	21.0	18.0	16.5
WIND ZONE 4	LIGHT	S26L1	26	22	195	18.0	13.0	10.5	9.0	16.5	14.5	13.0
		S30L1	30	22	225	18.5	13.0	10.5	9.0	17.0	15.0	13.5
		S35L1	35	22	255	19.0	13.5	11.0	9.0	17.5	15.5	14.0
	HEAVY	S30H1	30	25	330	22.0	15.0	12.0	9.5	19.5	17.0	15.0
		S35H1	35	25	385	23.0	15.5	12.5	10.0	20.0	17.5	15.5
WIND ZONE 5	LIGHT	S26L2	26	23	250	19.0	13.5	10.5	9.0	17.5	15.5	13.5
		S30L2	30	23	290	20.0	14.0	11.0	9.5	18.0	16.0	14.0
		S35L2	35	23	315	21.0	14.5	11.5	10.0	19.0	16.5	14.5
	HEAVY	S30H2	30	29	415	23.5	15.5	12.5	10.5	21.0	18.0	16.0
		S35H2	35	29	485	25.0	16.5	13.0	11.0	21.5	18.5	16.5

Concrete Volume (cubic yards) = .356 X L

**Fabrication Design Notes:**

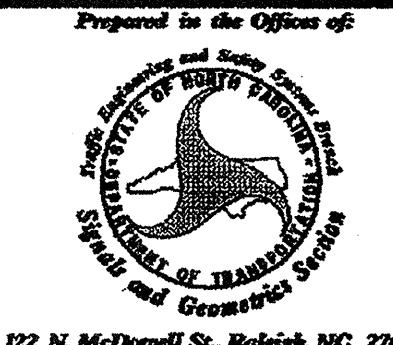
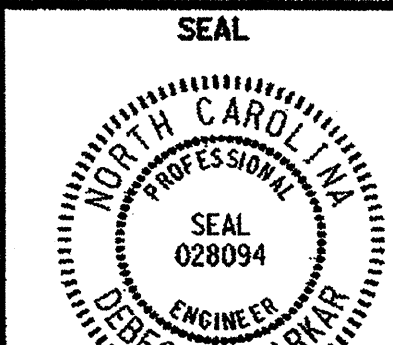
1. Values shown in "Moment at the Pole Base" column represents the minimum acceptable capacity allowable for design using a design CSR of 1.
2. Base plate thickness (T) is 2.0 inches.

**Foundation Selection:**

1. Perform a standard penetration test at each proposed foundation site to determine "N" value.
2. Select the appropriate wind zone from sheet M 1.
3. Select the soil type (Clay or Sand) that best describes the soil characteristics.
4. Get the appropriate pole case load number from the plans or from the Engineer.
5. Select the appropriate column in the chart based on soil type and "N" value. Select the appropriate row based on the pole load case. The foundation depth is the value where the column and the row intersect.

Standard Strain Poles

02-SEP-2005 12:42 v:\p\p\ee-un1\work\group\p2004\metal pole standard\004 m8 std strcn pole.dgn

	<b>Standard Strain Poles and Standard Foundations</b>		
	PLAN DATE: <b>May 2005</b> PREPARED BY: <b>P.L. Alexander</b>	REVIEWED BY: <b>C.F. Andrews</b> REVIEWED BY: <b>A.M. Esposito</b>	
SCALE: <b>None</b>		SIGNATURE: <i>D. Sarker</i> DATE: <b>9.2.2005</b>	

- 1 INSTALL REA, PE - 22, SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 2 INSTALL REA, PE - 38, (FIGURE 8) SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 3 INSTALL REA, PE - 39, (UNDERGROUND) SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 4 INSTALL SMFO CABLE
- 5 INSTALL MMFO CABLE
- 6 INSTALL FIBER OPTIC DROP CABLE
- 7 INSTALL TRACER WIRE
- 8 TRENCH
- 9 INSTALL PVC CONDUIT
- 10 INSTALL RIGID, GALVANIZED STEEL CONDUIT
- 11 INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD
- 12 INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL
- 13 INSTALL OUTER-DUCT POLYETHYLENE CONDUIT
- 14 INSTALL POLYETHYLENE CONDUIT
- 15 DIRECTIONAL DRILL CONDUIT
- 16 BORE AND JACK CONDUIT
- 17 INSTALL CABLE(S) IN EXISTING CONDUIT
- 18 INSTALL CABLE(S) IN NEW CONDUIT
- 19 INSTALL CABLE(S) IN EXISTING RISER
- 20 INSTALL CABLE(S) IN NEW RISER
- 21 INSTALL CABLE(S) IN EXISTING CONDUIT STUB-OUTS
- 22 INSTALL NEW CONDUIT INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
- 23 INSTALL NEW RISER INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
- 24 INSTALL NEW CONDUIT INTO EXISTING POLE MOUNTED CABINET
- 25 INSTALL NEW RISER INTO EXISTING POLE MOUNTED CABINET
- 26 TERMINATE COMMUNICATIONS CABLE ON EXISTING TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET
- 27 INSTALL NEW TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET
- 28 INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS AND FUSION SPLICE CABLE IN CABINET
- 29 INSTALL UNDERGROUND SPLICE ENCLOSURE
- 30 INSTALL AERIAL SPLICE ENCLOSURE
- 31 INSTALL POLE MOUNTED SPLICE CABINET
- 32 INSTALL BASE MOUNTED SPLICE CABINET
- 33 REMOVE EXISTING SPLICE CABINET

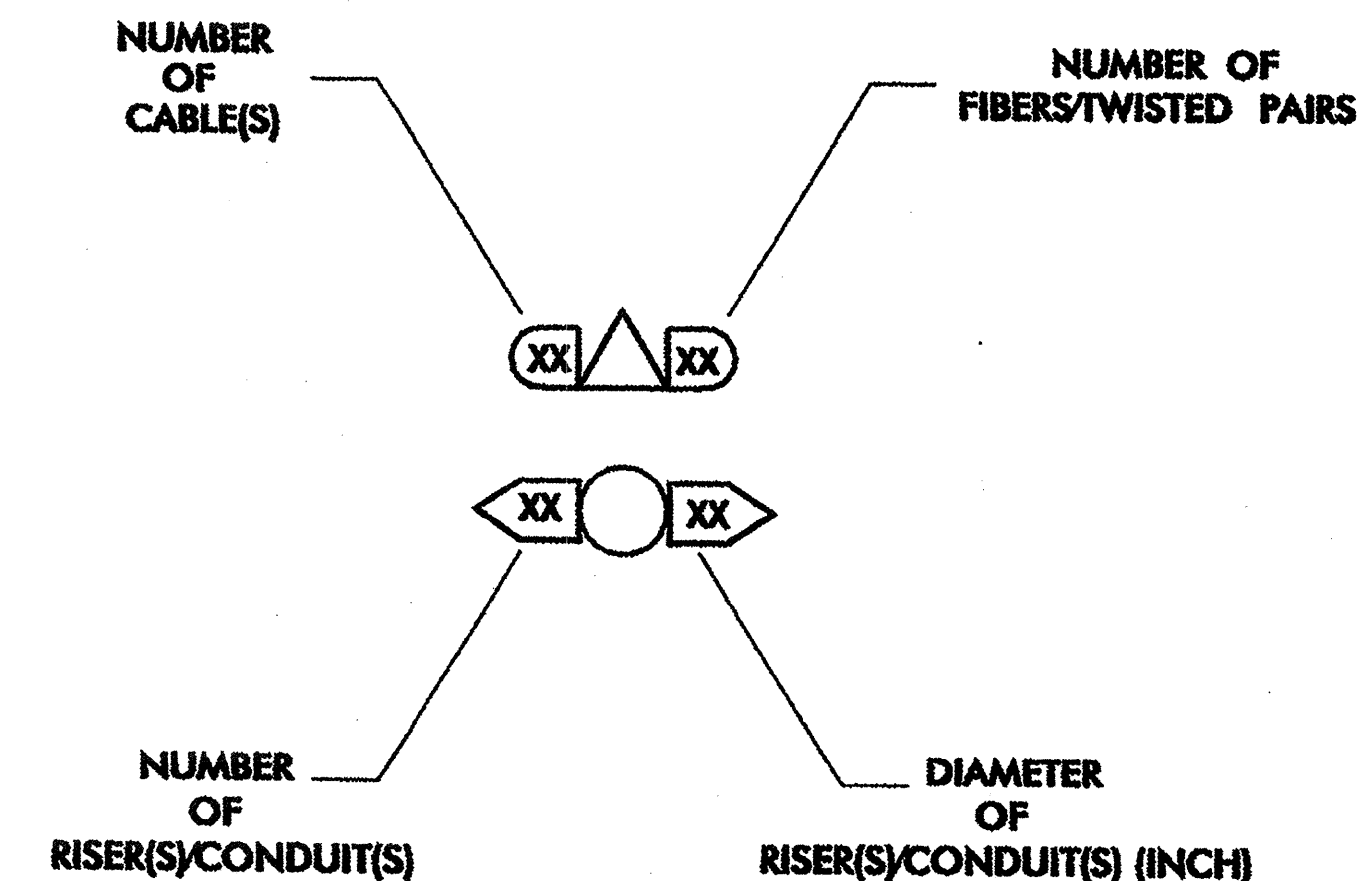
- 34 INSTALL CABINET FOUNDATION
- 35 REMOVE EXISTING CABINET FOUNDATION
- 36 INSTALL CCTV CAMERA ASSEMBLY
- 37 INSTALL CCTV CAMERA WOOD POLE
- 38 INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
- 39 INSTALL JUNCTION BOX
- 40 INSTALL OVERSIZED JUNCTION BOX
- 41 REMOVE EXISTING JUNCTION BOX
- 42 INSTALL WOOD POLE
- 43 REMOVE EXISTING WOOD POLE
- 44 INSTALL AERIAL GUY ASSEMBLY
- 45 INSTALL STANDARD GUY ASSEMBLY
- 46 INSTALL SIDEWALK GUY ASSEMBLY
- 47 INSTALL MESSENGER CABLE
- 48 REMOVE EXISTING COMMUNICATIONS AND MESSENGER CABLE
- 49 REMOVE EXISTING MESSENGER CABLE
- 50 INSTALL TELEPHONE SERVICE
- 51 INSTALL CABLE STORAGE RACKS (SNOW SHOES) AND STORE 100 FEET OF CABLE
- 52 INSTALL DELINEATOR MARKER
- 53 STORE 20 FEET OF COMMUNICATIONS CABLE
- 54 LASH CABLE(S) TO EXISTING SIGNAL/COMMUNICATIONS CABLE
- 55 LASH CABLE(S) TO EXISTING MESSENGER CABLE
- 56 LASH CABLE(S) TO NEW MESSENGER CABLE
- 57 MODIFY EXISTING ELECTRICAL SERVICE
- 58 INSTALL NEW ELECTRICAL SERVICE

**LEGEND**

- FO NEW FIBER OPTIC COMMUNICATIONS CABLE
- TWIST PR NEW TWISTED PAIR COMMUNICATIONS CABLE
- EXI EXISTING COMMUNICATIONS CABLE
- REM EXISTING COMMUNICATIONS CABLE TO BE REMOVED
- NEW AERIAL GUY ASSEMBLY
- NEW CONDUIT
- EXISTING CONDUIT
- DD NEW DIRECTIONAL DRILLED CONDUIT
- B&J NEW BORED AND JACKED CONDUIT
- NEW JUNCTION BOX
- EXISTING JUNCTION BOX
- NEW WOOD POLE
- EXISTING WOOD POLE
- AERIAL SPLICE ENCLOSURE
- NEW METAL POLE
- EXISTING METAL POLE
- NEW CCTV ASSEMBLY
- NEW STANDARD GUY ASSEMBLY
- NEW SIDEWALK GUY ASSEMBLY
- NEW CABLE STORAGE RACKS (SNOW SHOES)
- EXISTING CONTROLLER AND CABINET
- EXISTING SPLICE CABINET
- NEW SPLICE CABINET
- SIGNAL POLE
- XX-XXXX SIGNAL INVENTORY NUMBER

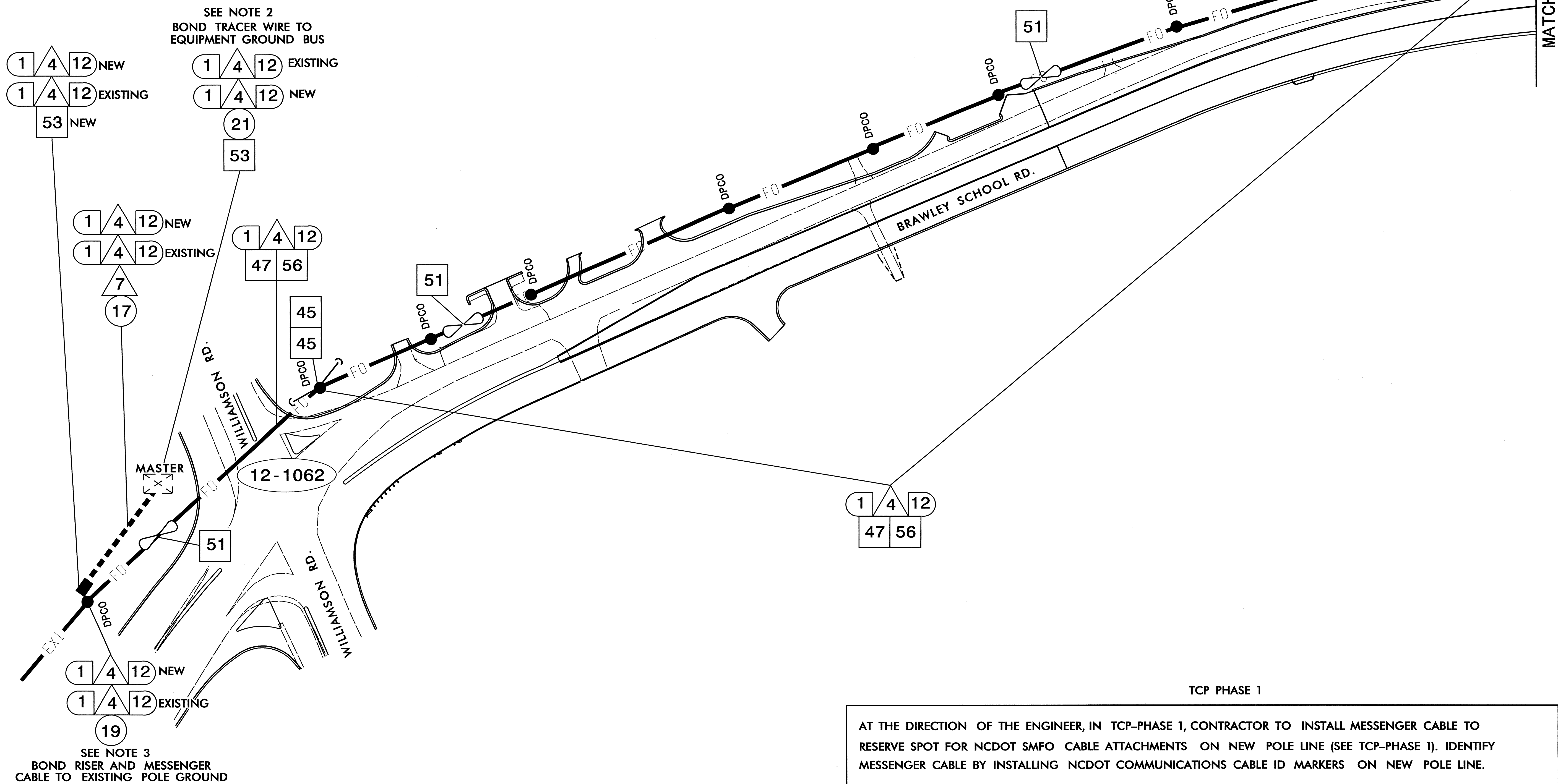
**CONSTRUCTION NOTE SYMBOLOGY KEY**

- XX INDICATES NUMBER OF CABLES, LOOPS, ETC.
- XX INDICATES NUMBER OF FIBERS PER CABLE, TWISTED PAIRS PER CABLE, ETC.
- XX INDICATES NUMBER OF RISER(S)/CONDUIT(S)
- XX INDICATES DIAMETER OF RISER(S)/CONDUIT(S) (INCH)



 Prepared in the Office of: NORTH CAROLINA PROFESSIONAL SEAL 025919 ENGINEER GEORGE A. FULLER	<b>CONSTRUCTION NOTES</b>		SEAL  GEORGE A. FULLER ENGINEER 025919
	PLAN DATE: _____ PREPARED BY: _____ SCALE: _____ 222 N. McDowell St., Raleigh, NC 27603	REVIEWED BY: _____ REVIEWED BY: <b>G. A. FULLER</b> REVISIONS: _____ INIT. DATE: _____	

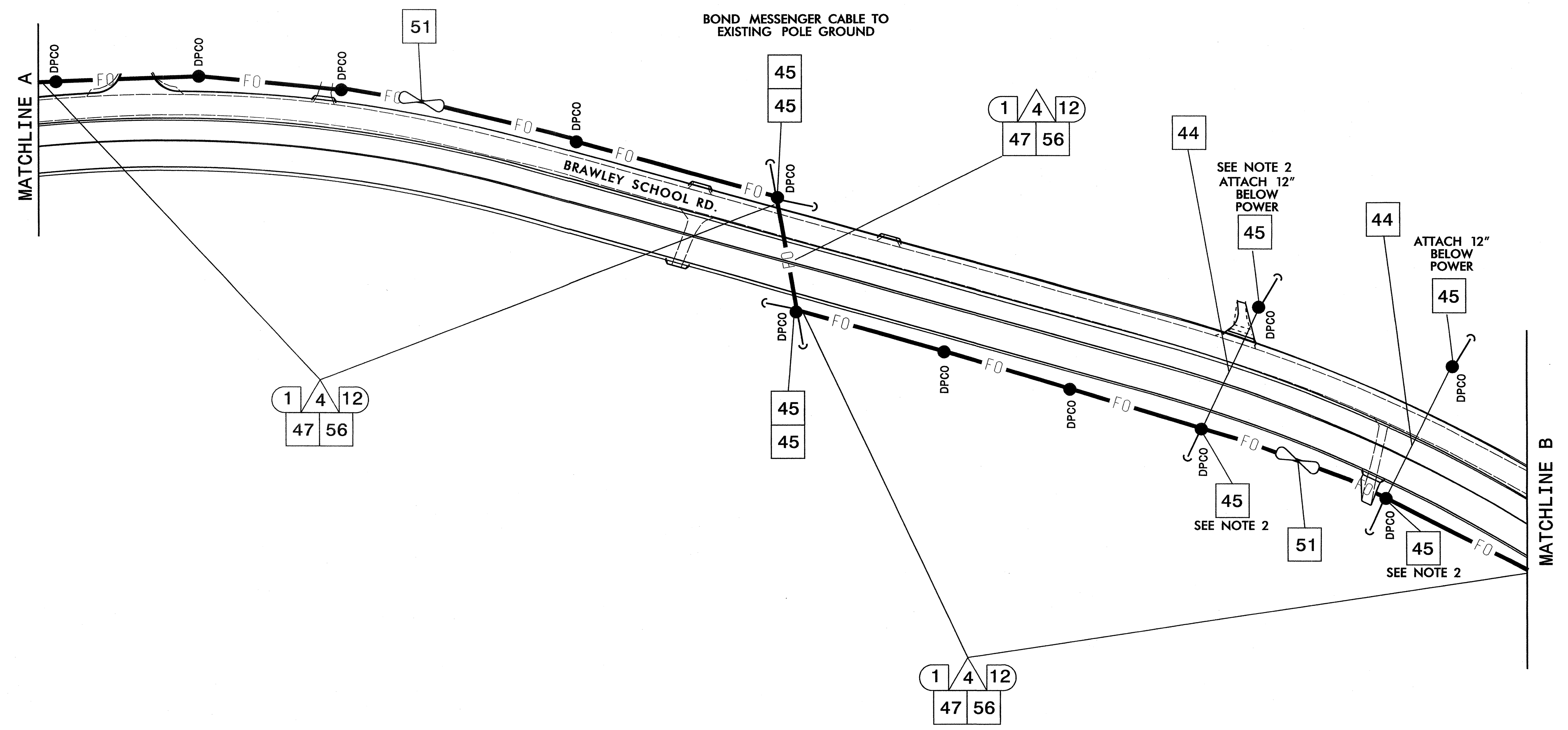




NOTES:

1. ALL NCDOT ATTACHMENT POINTS ARE TO BE 40" BELOW POWER, FRONT SIDE OF POLE, UNLESS OTHERWISE NOTED.
2. CONTRACTOR TO REUSE FIBER OPTIC INTERCONNECT CENTER AND SPLICE AS SHOWN IN THE FIBER OPTIC SPLICE PLANS.
3. RESEAL RISER USING HEAT SHRINK TUBING (RETROFIT /KIT).

	<b>COMMUNICATIONS CABLE ROUTING PLANS</b> <b>ALONG BRAWLEY SCHOOL RD.</b>		
	DIVISION 12 IREDELL CO. MOORESVILLE PLAN DATE: OCTOBER 2008 REVIEWED BY: I. N. AVERY PREPARED BY: H. T. BERGGREN REVIEWED BY: G. A. FULLER, PE	REVISIONS: _____ INIT. DATE _____ _____	
750 N. Greenfield Pkwy., Garner, NC 27529 SCALE: 0' _____ 	SIGNATURE: <i>Gregory A. Fuller</i> DATE: 1/14/09 CADD File name:		SEAL



TCP PHASE 1

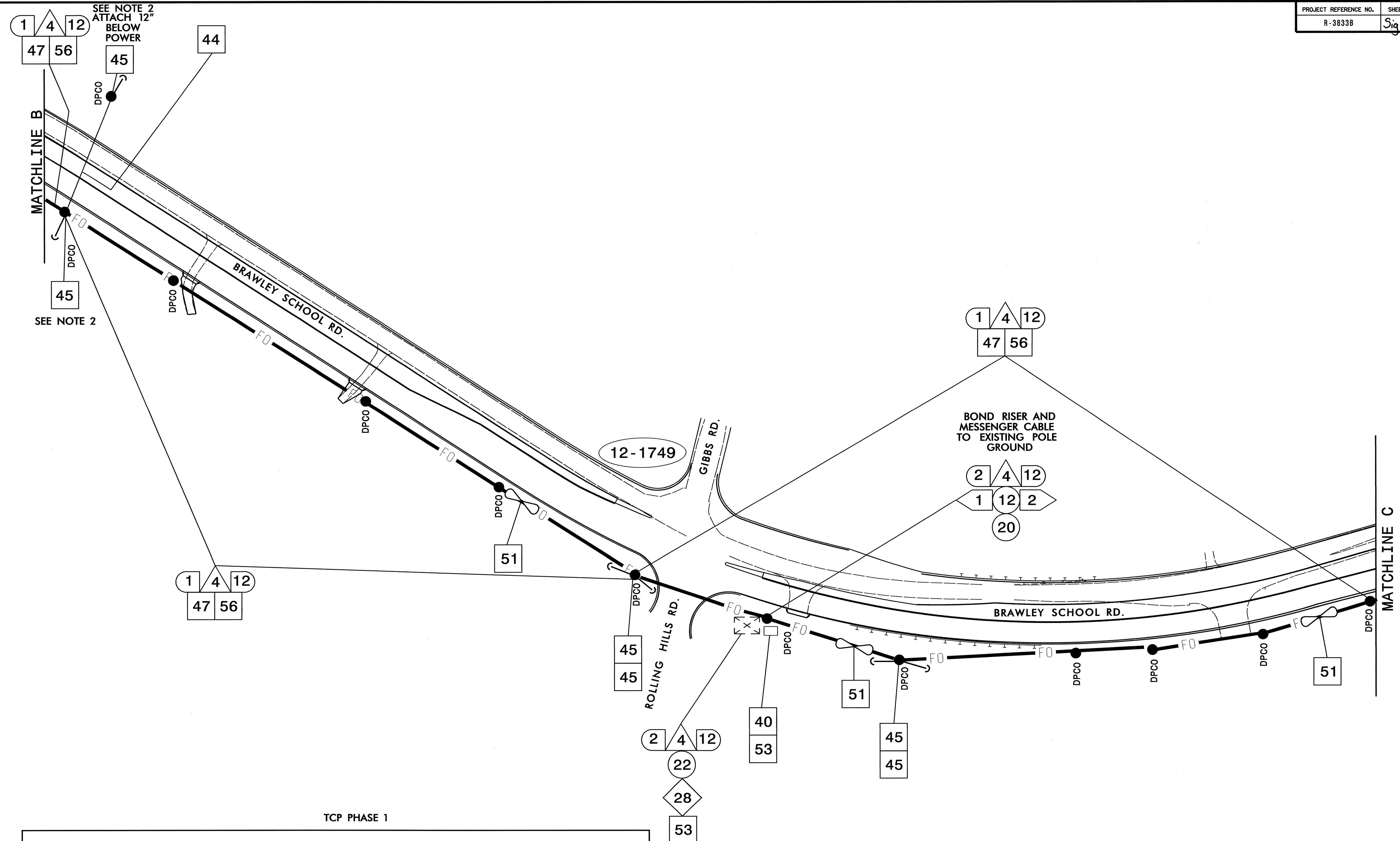
AT THE DIRECTION OF THE ENGINEER, IN TCP-PHASE 1, CONTRACTOR TO INSTALL MESSENGER CABLE TO RESERVE SPOT FOR NCDOT SMFO CABLE ATTACHMENTS ON NEW POLE LINE (SEE TCP-PHASE 1). IDENTIFY MESSENGER CABLE BY INSTALLING NCDOT COMMUNICATIONS CABLE ID MARKERS ON NEW POLE LINE.

- NOTES:
1. ALL NCDOT ATTACHMENT POINTS ARE TO BE 40" BELOW POWER, FRONT SIDE OF POLE, UNLESS OTHERWISE NOTED.
  2. BOND GUY ASSEMBLY (AERIAL GUY AND DOWN GUY) TO DUKE POWER'S DOWN GUY.

	<b>COMMUNICATIONS CABLE ROUTING PLANS</b> <b>ALONG BRAWLEY SCHOOL RD.</b>		
	DIVISION 12 IREDELL CO. MOORESVILLE PLAN DATE: OCTOBER 2008 PREPARED BY: H. T. BERGGREN	REVIEWED BY: I. N. AVERY REVIEWED BY: G. A. FULLER, PE	

Signature: *Gregory A. Fuller* 11/3/08  
 CADD File Name: \_\_\_\_\_



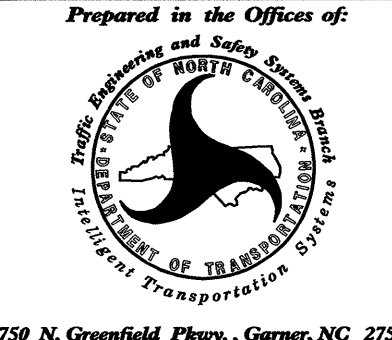

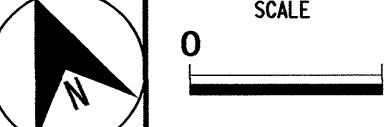


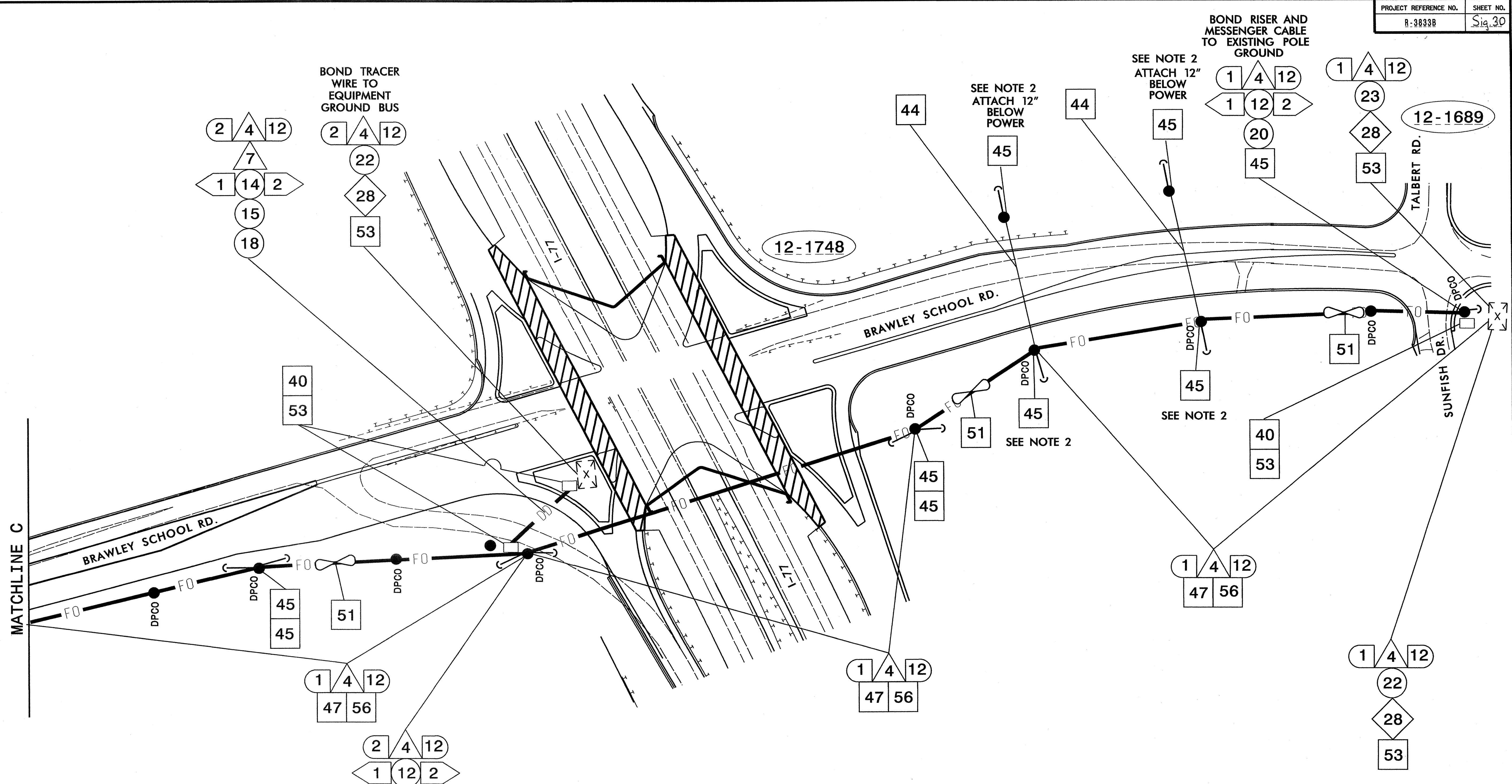
TCP PHASE 1

AT THE DIRECTION OF THE ENGINEER, IN TCP-PHASE 1, CONTRACTOR TO INSTALL MESSENGER CABLE TO RESERVE SPOT FOR NCDOT SMFO CABLE ATTACHMENTS ON NEW POLE LINE (SEE TCP-PHASE 1). IDENTIFY MESSENGER CABLE BY INSTALLING NCDOT COMMUNICATIONS CABLE ID MARKERS ON NEW POLE LINE.

NOTES:

1. ALL NCDOT ATTACHMENT POINTS ARE TO BE 40" BELOW POWER, FRONT SIDE OF POLE, UNLESS OTHERWISE NOTED.
2. BOND GUY ASSEMBLY (AERIAL GUY AND DOWN GUY) TO DUKE POWER'S DOWN GUY.

	<b>COMMUNICATIONS CABLE ROUTING PLANS</b> <b>ALONG BRAWLEY SCHOOL RD.</b>		
	DIVISION 12 IREDELL CO. MOORESVILLE PLAN DATE: OCTOBER 2008 REVIEWED BY: I. N. AVERY PREPARED BY: H. T. BERGGREN REVIEWED BY: G. A. FULLER, PE	REVISIONS _____ _____ _____	
Prepared in the Offices of: 		SCALE 0 _____ _____	
750 N. Greenfield Pkwy., Garner, NC 27529		CADD Filename: _____	



BOND TRACER WIRE TO EQUIPMENT GROUND BUS

BOND RISER AND MESSENGER CABLE TO EXISTING POLE GROUND

SEE NOTE 2 ATTACH 12" BELOW POWER

SEE NOTE 2 ATTACH 12" BELOW POWER

SEE NOTE 2

SEE NOTE 2

BOND RISER AND MESSENGER CABLE TO EXISTING POLE GROUND

TCP PHASE 1

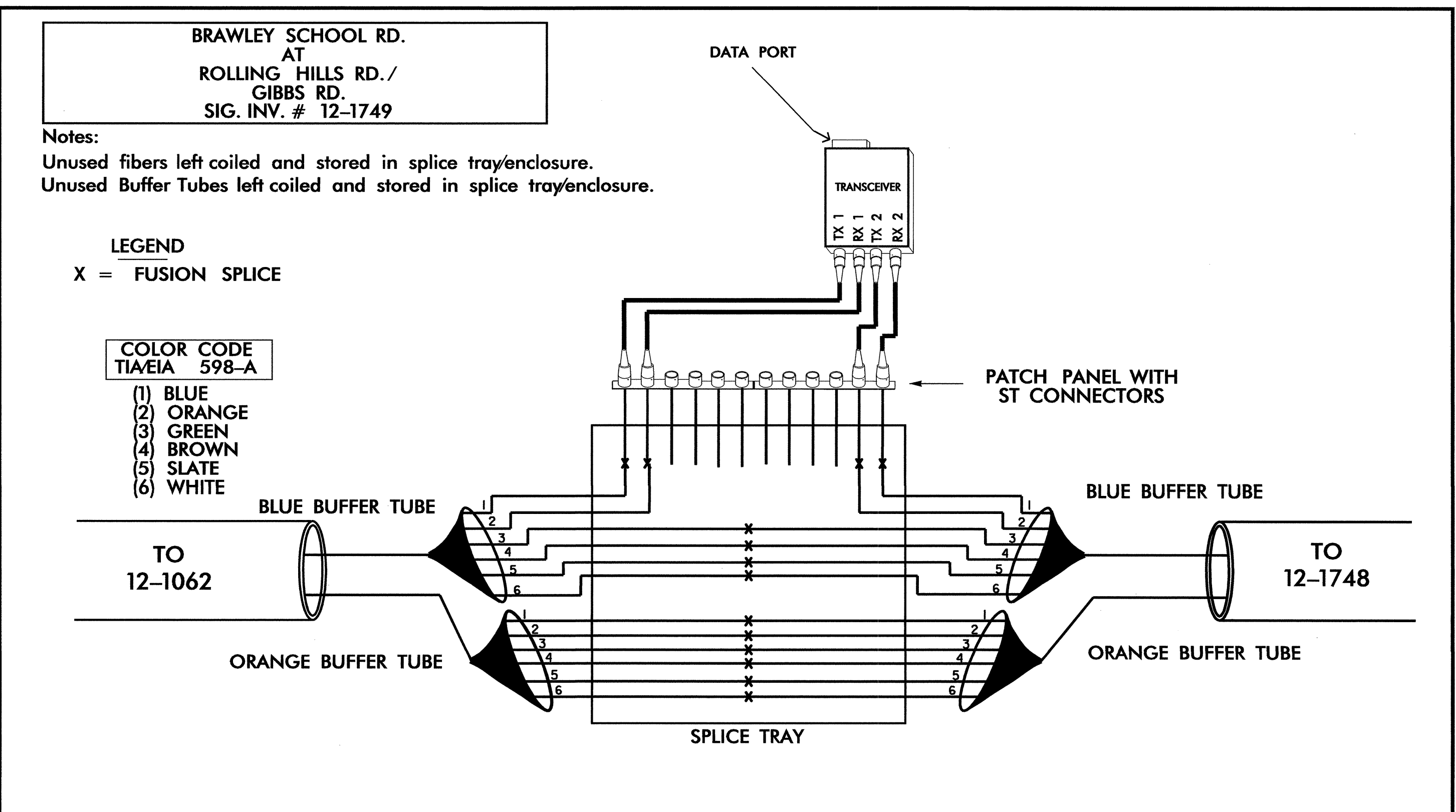
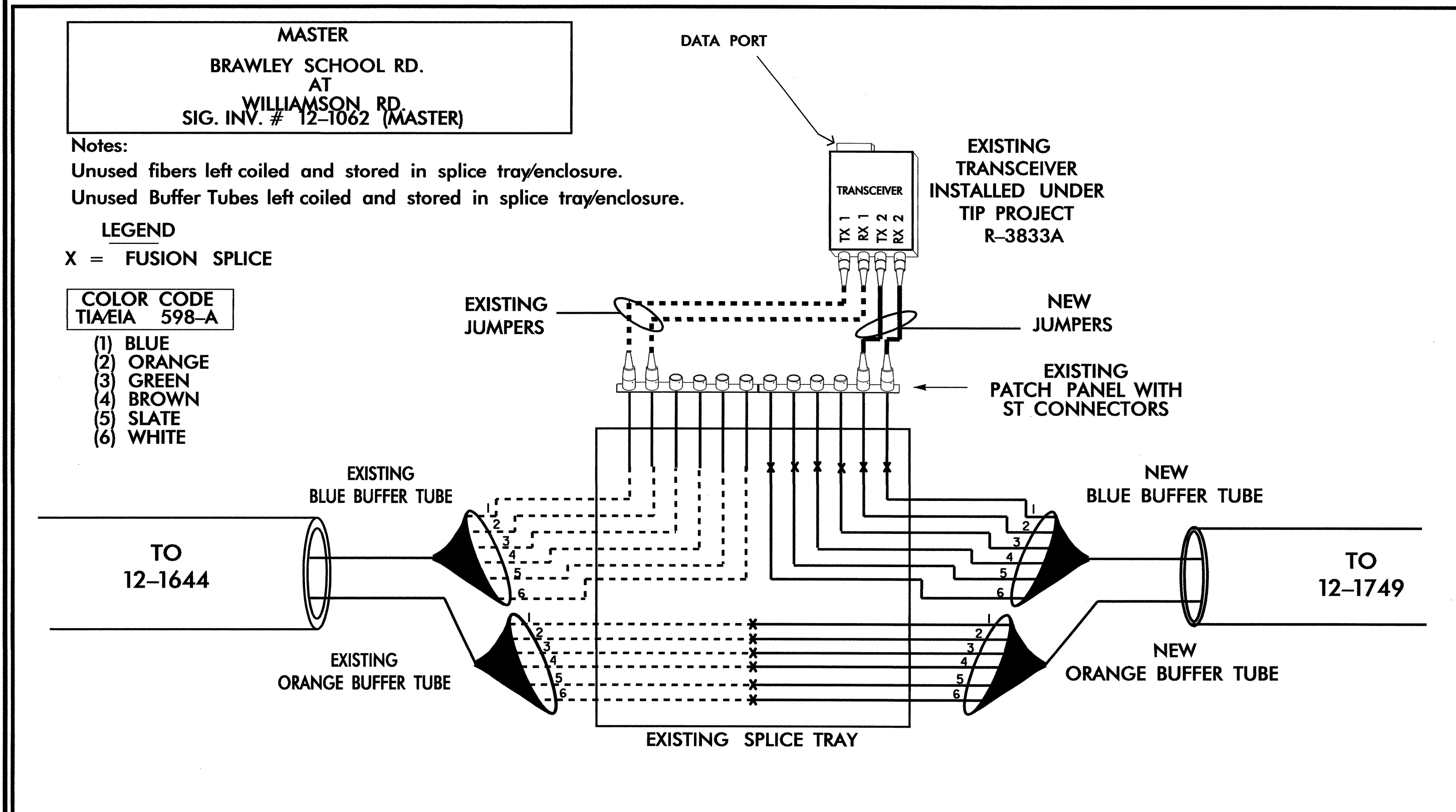
AT THE DIRECTION OF THE ENGINEER, IN TCP-PHASE 1, CONTRACTOR TO INSTALL MESSENGER CABLE TO RESERVE SPOT FOR NCDOT SMFO CABLE ATTACHMENTS ON NEW POLE LINE (SEE TCP-PHASE 1). IDENTIFY MESSENGER CABLE BY INSTALLING NCDOT COMMUNICATIONS CABLE ID MARKERS ON NEW POLE LINE.

NOTES:

1. ALL NCDOT ATTACHMENT POINTS ARE TO BE 40" BELOW POWER, FRONT SIDE OF POLE, UNLESS OTHERWISE NOTED.
2. BOND GUY ASSEMBLY (AERIAL GUY AND DOWN GUY) TO DUKE POWER'S DOWN GUY.

<p>750 N. Greenfield Pkwy., Garner, NC 27529</p>	<p><b>COMMUNICATIONS CABLE ROUTING PLANS</b></p> <p><b>ALONG BRAWLEY SCHOOL RD.</b></p>		
	<p>DIVISION 12 IREDELL CO. MOORESVILLE</p> <p>PLAN DATE: OCTOBER 2008</p>	<p>PREPARED BY: H. T. BERGGREN</p>	
<p>SCALE: 0</p>	<p>REVISIONS</p>	<p>INIT. DATE</p>	<p>SIGNATURE: <i>Gregory A. Fuller</i> DATE: <i>10/2008</i></p>

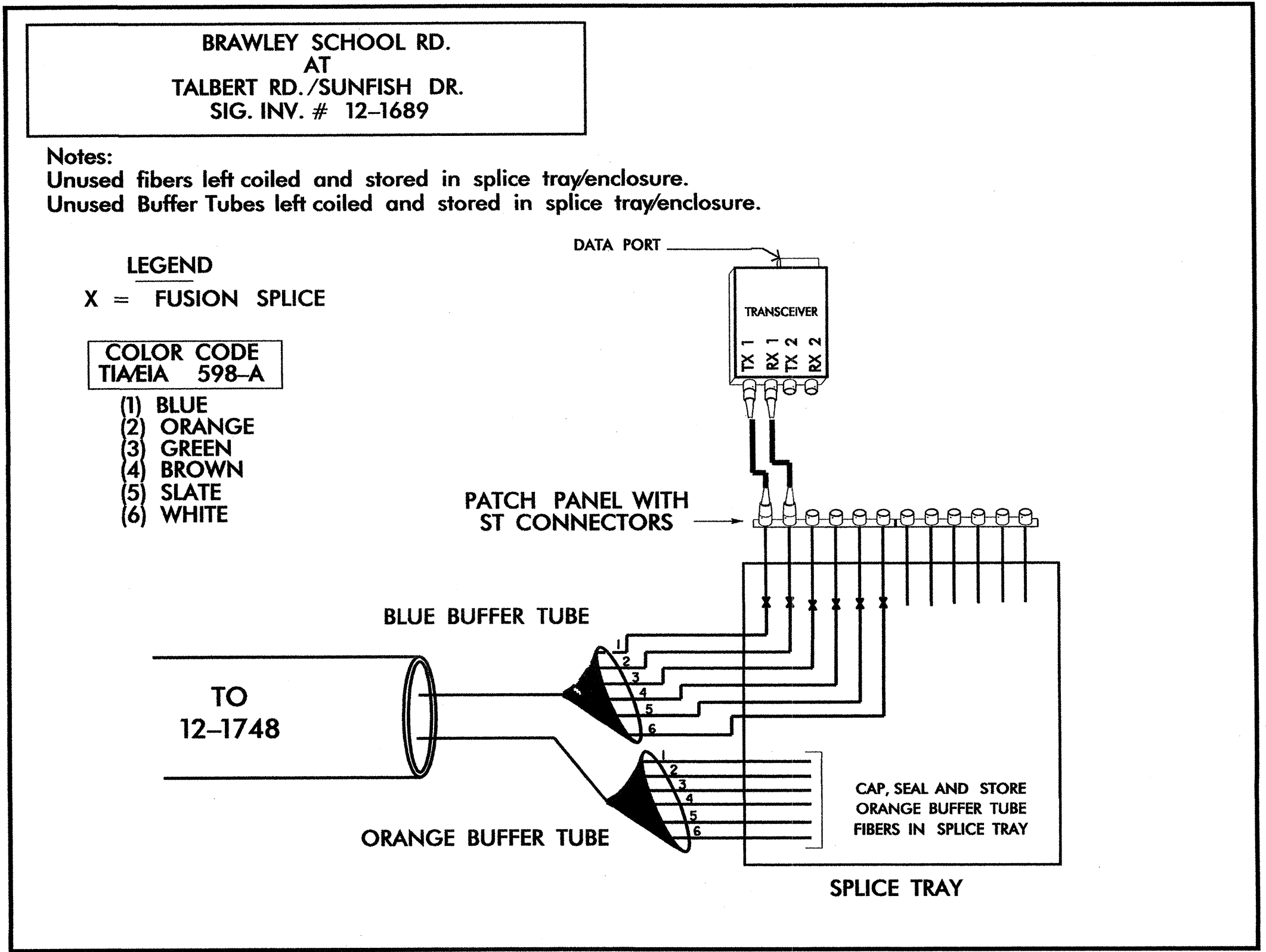
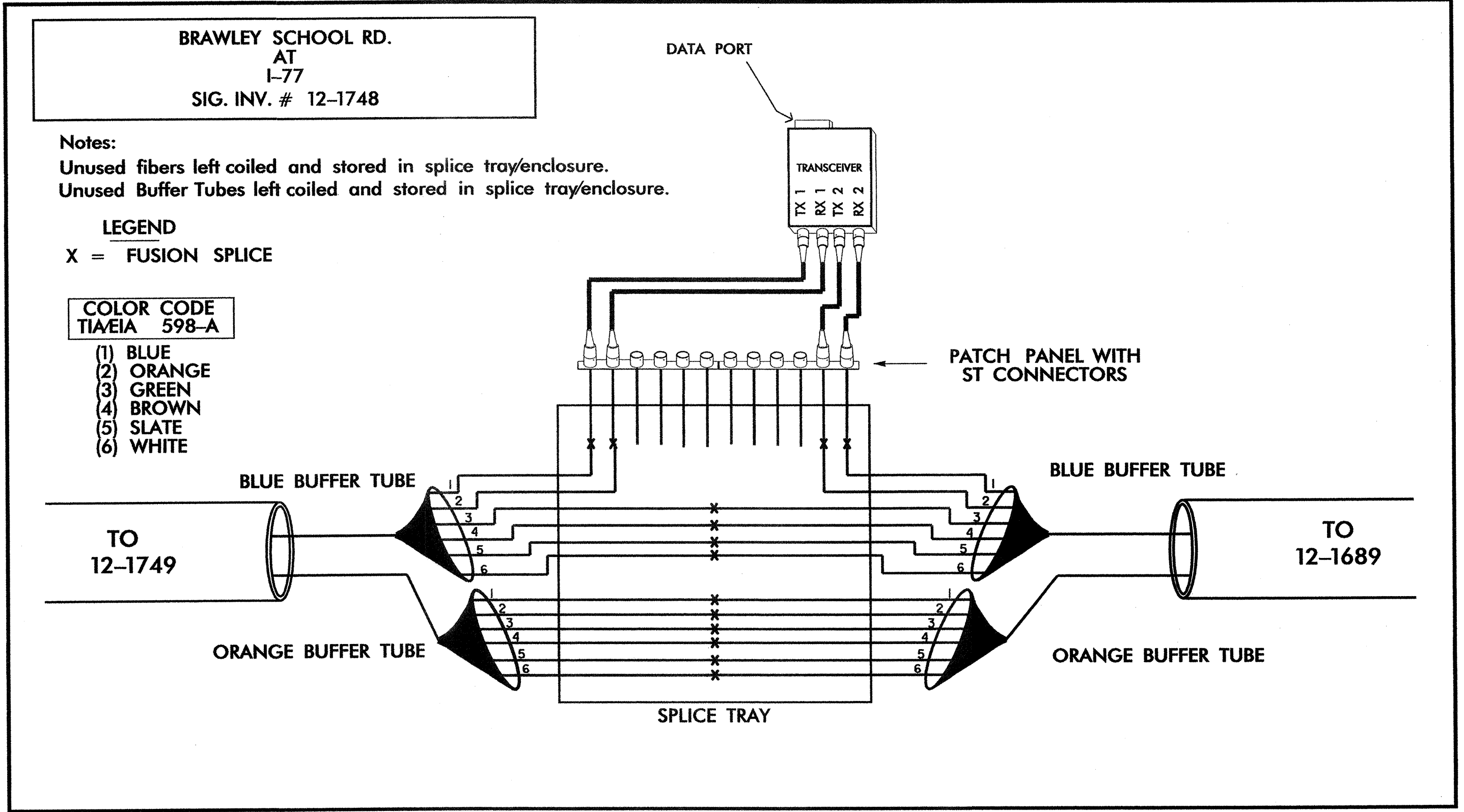




NOTES:

1. ALL TRANSCEIVER TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS BASED ON EQUIPMENT SPECIFICATIONS.
2. CONTRACTOR TO INSTALL NEW TRANSCEIVERS COMPATIBLE WITH THOSE INSTALLED UNDER TIP PROJECT R-3833A.

	<b>SPLICE PLANS</b> <b>BRAWLEY SCHOOL ROAD</b>		
	DIVISION 12 IREDELL CO. MOORESVILLE PLAN DATE: OCTOBER 2008 REVIEWED BY: I. N. AVERY PREPARED BY: H. T. BERGGREN REVIEWED BY: G. A. FULLER, PE		
SCALE 0	REVISIONS _____ _____ _____	INIT. DATE _____ _____ _____	SIGNATURE  DATE 1/14/09



**NOTES:**

1. ALL TRANSCEIVER TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS BASED ON EQUIPMENT SPECIFICATIONS.
2. CONTRACTOR TO INSTALL NEW TRANSCEIVERS COMPATIBLE WITH THOSE INSTALLED UNDER TIP PROJECT R-3833A.

	<b>SPLICE PLANS BRAWLEY SCHOOL RD.</b>		
	DIVISION 12	IREDELL CO.	
	PLAN DATE: OCTOBER 2008	REVIEWED BY: I. N. AVERY	PREPARED BY: H. T. BERGGREN REVIEWED BY: G. A. FULLER, PE REVISIONS: _____ INIT. DATE: _____ SIGNATURE: <i>Gregory A. Fuller</i> DATE: <i>11/3/08</i>



STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

5-07

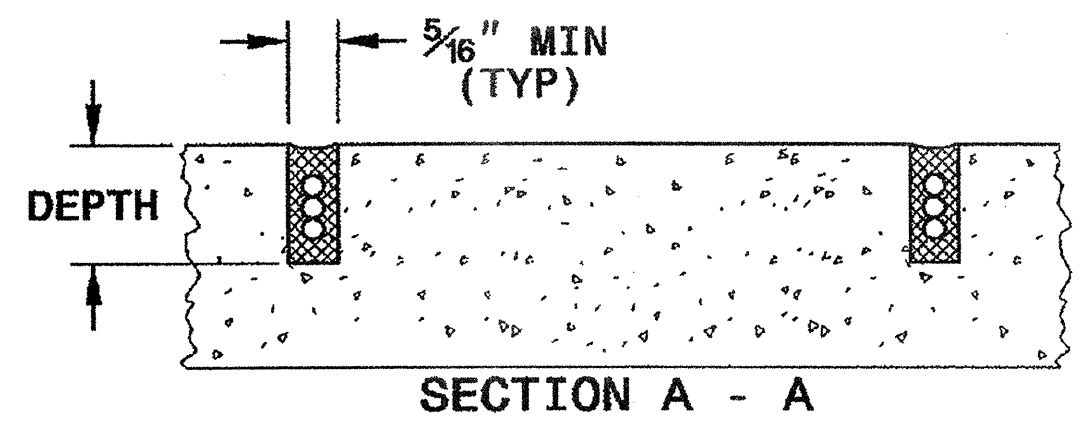
ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**

SHEET 1 OF 3  
**1725D01**

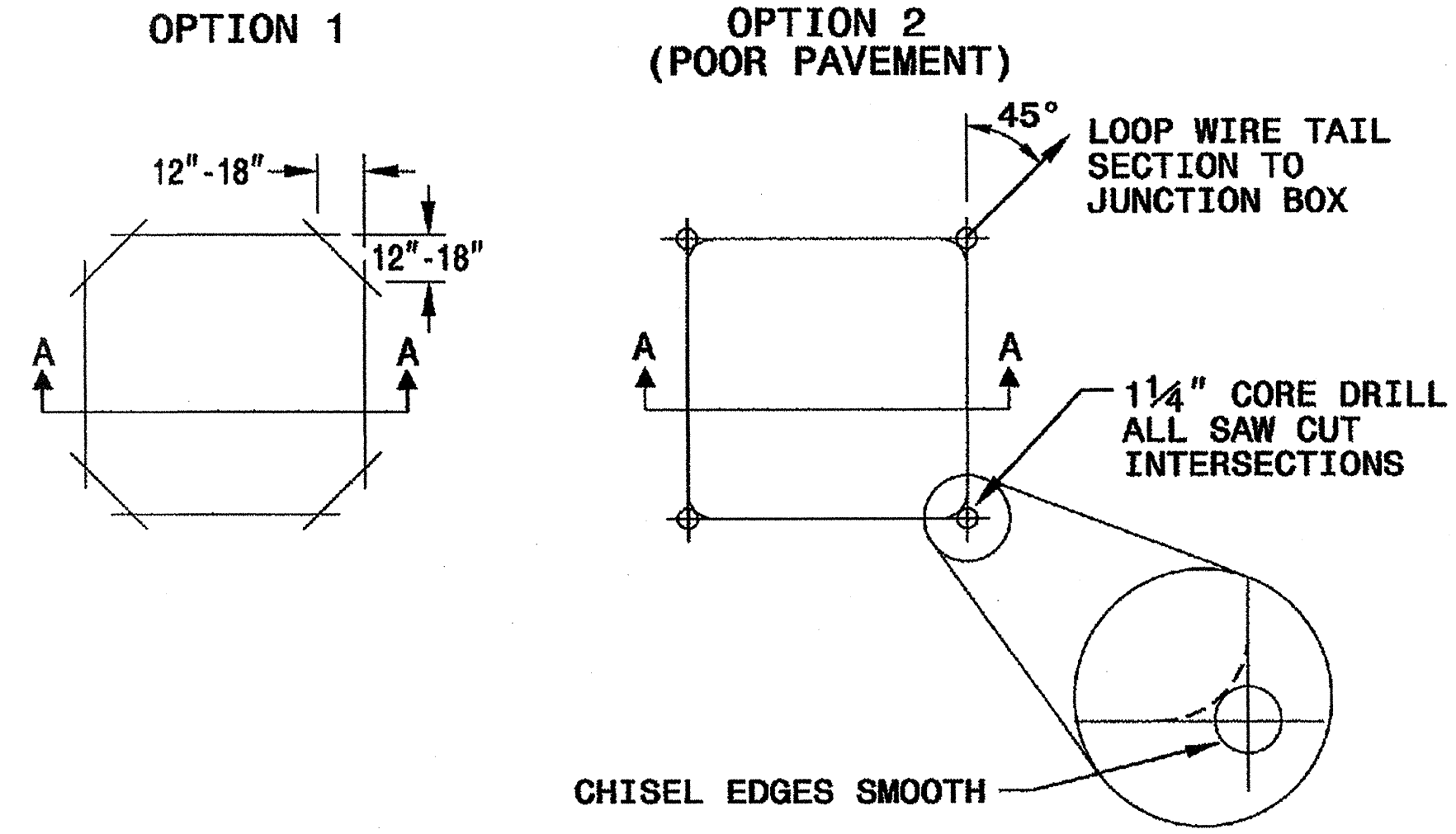
**CONVENTIONAL 4-SIDED LOOP**

**SAW SLOT DEPTH CHART**

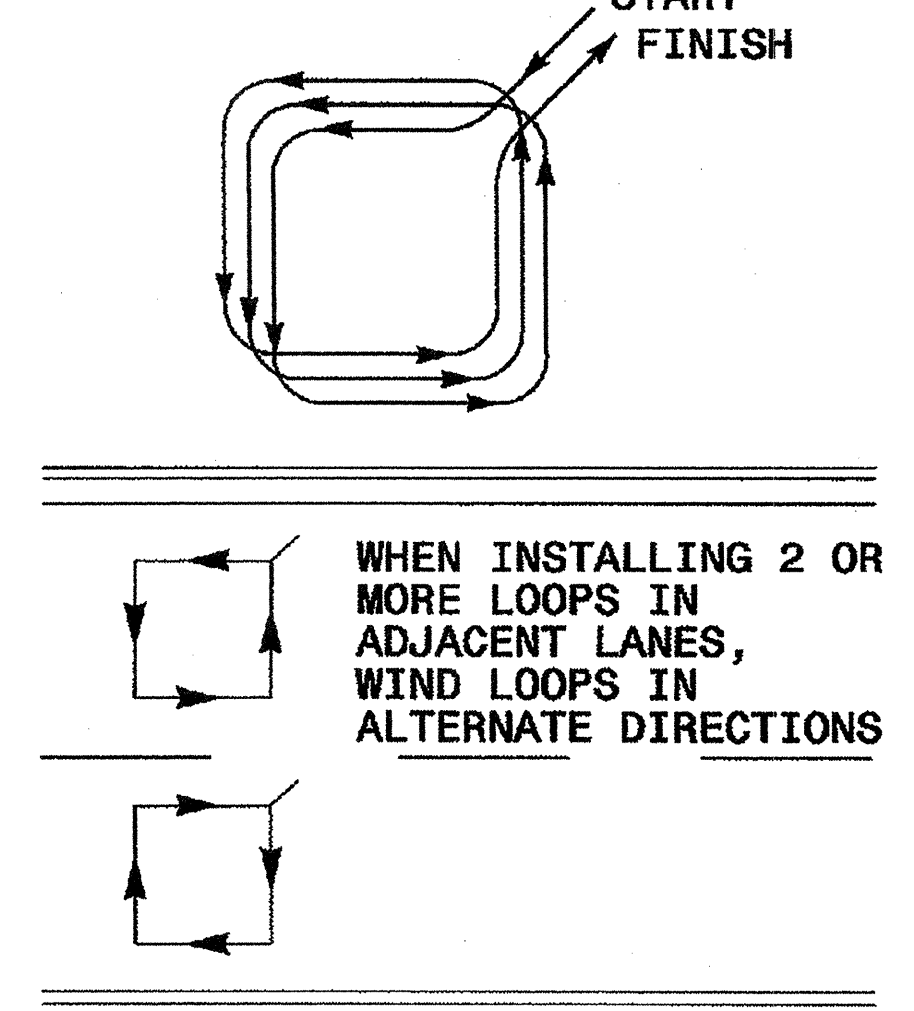
DEPTH (IN)	NO. OF WIRE TURNS				
	2	3	4	5	6
CONCRETE	2.0	2.0	2.5	2.5	3.0
ASPHALT	2.0	2.5	3.0	3.0	3.0



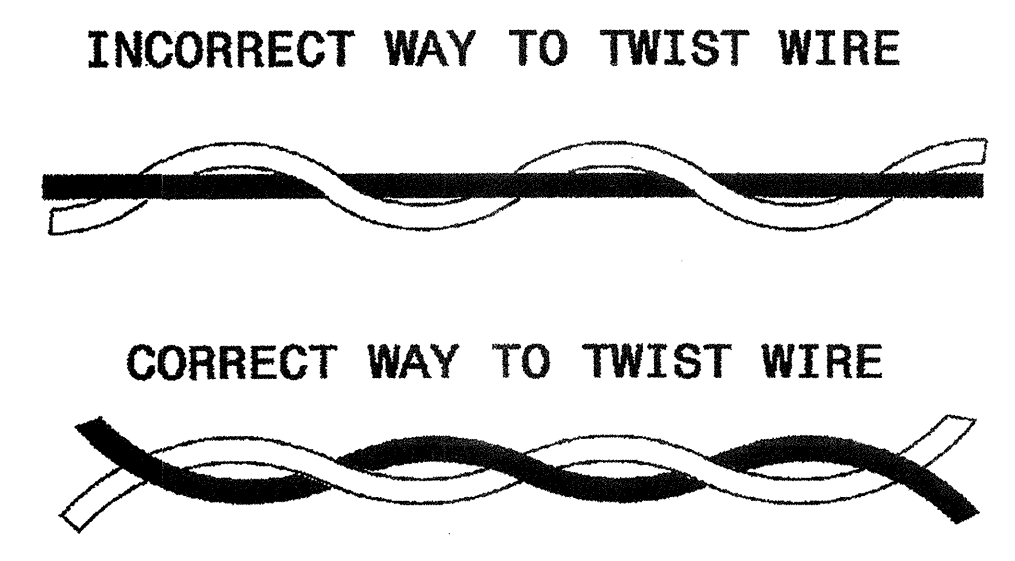
**SAW CUT OPTIONS**



**LOOP WINDING METHOD**



**LOOP WIRE TWISTING METHOD**

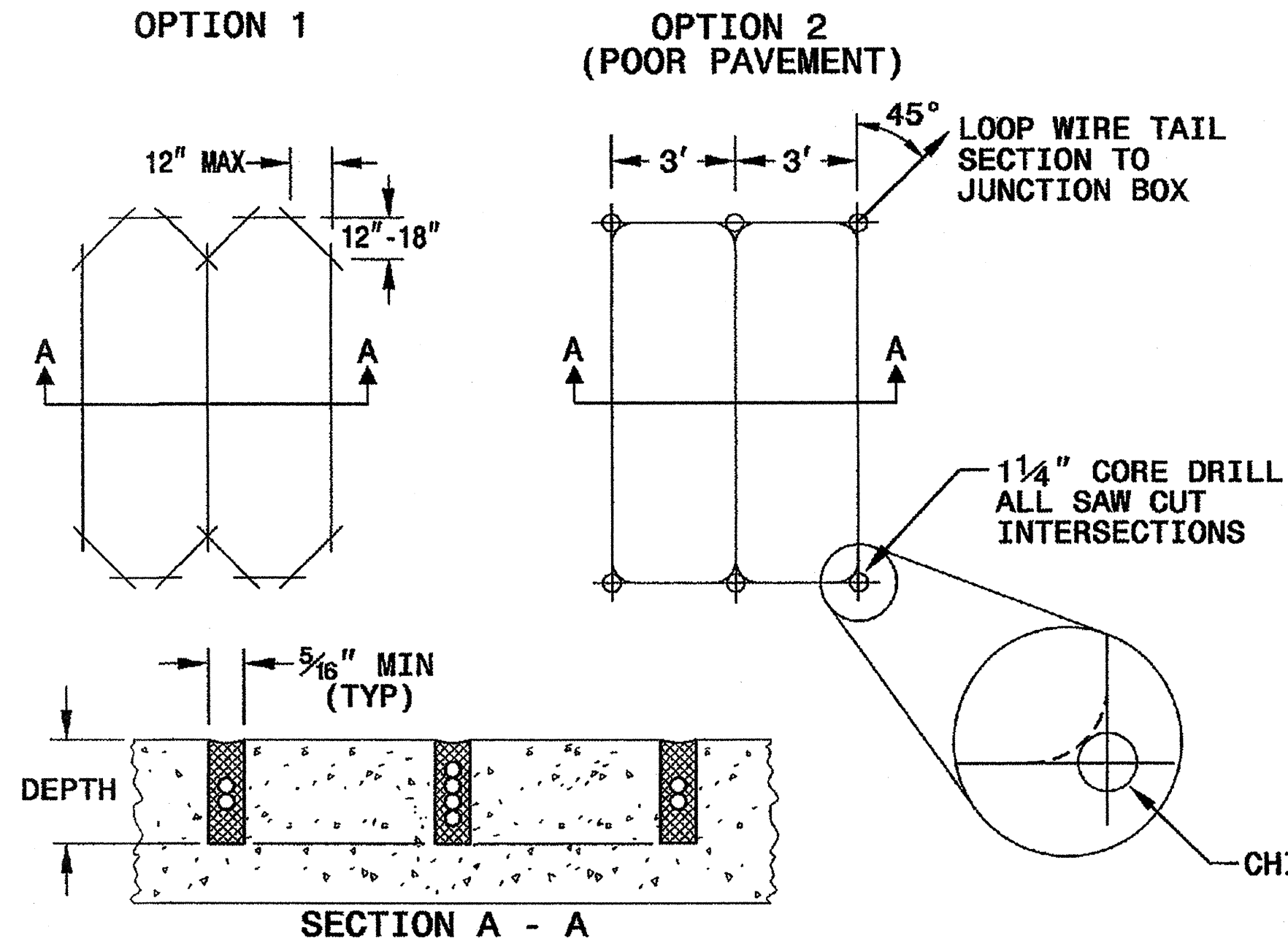


**NOTES**

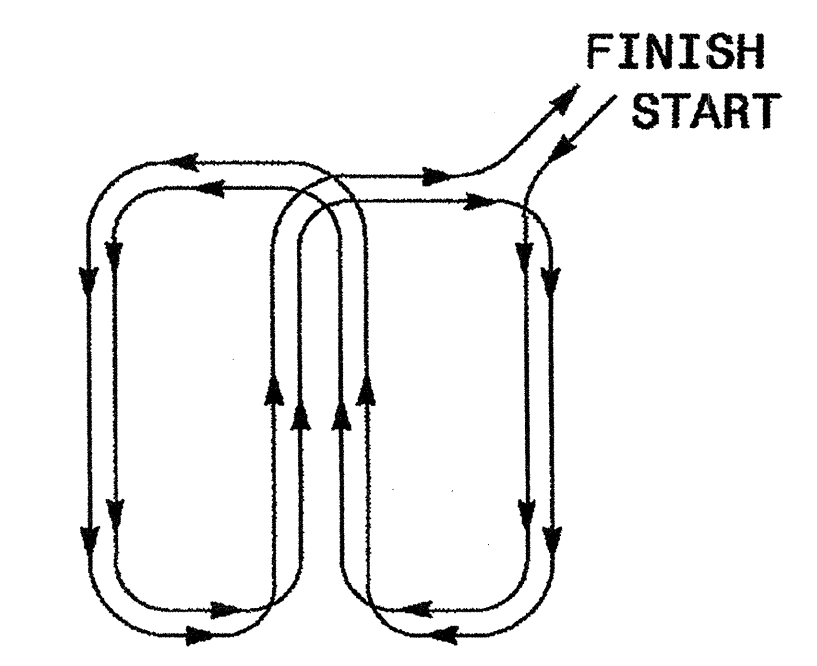
1. OVERLAP SAW CUTS AT CORNERS AND INTERSECTION POINTS TO ENSURE UNIFORM SAW SLOT DEPTH.
2. MAINTAIN 12" SPACING BETWEEN LOOP WIRE TAIL SECTIONS.
3. WIRE LOOPS CONNECTED TO THE SAME DETECTOR CHANNEL IN SERIES.
4. LOCATE LOOPS IN CENTER OF LANES UNLESS OTHERWISE SHOWN ON PLANS OR APPROVED BY ENGINEER.

**QUADRUPOLE LOOP**

**SAW CUT OPTIONS**



**LOOP WINDING METHOD**



DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

See Plate for Title

Prepared in the Offices of:  
**Intelligent Transportation Systems & Signals Unit**  
750 N. Greenfield Parkway  
Garner, NC 27529

SEAL  
NORTH CAROLINA  
PROFESSIONAL  
SEAL  
016286  
ENGINEER  
MILTON I. DEAN  
Signature: Milton I. Dean 9/5/07  
DATE

05-SEP-2007 14:00  
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STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

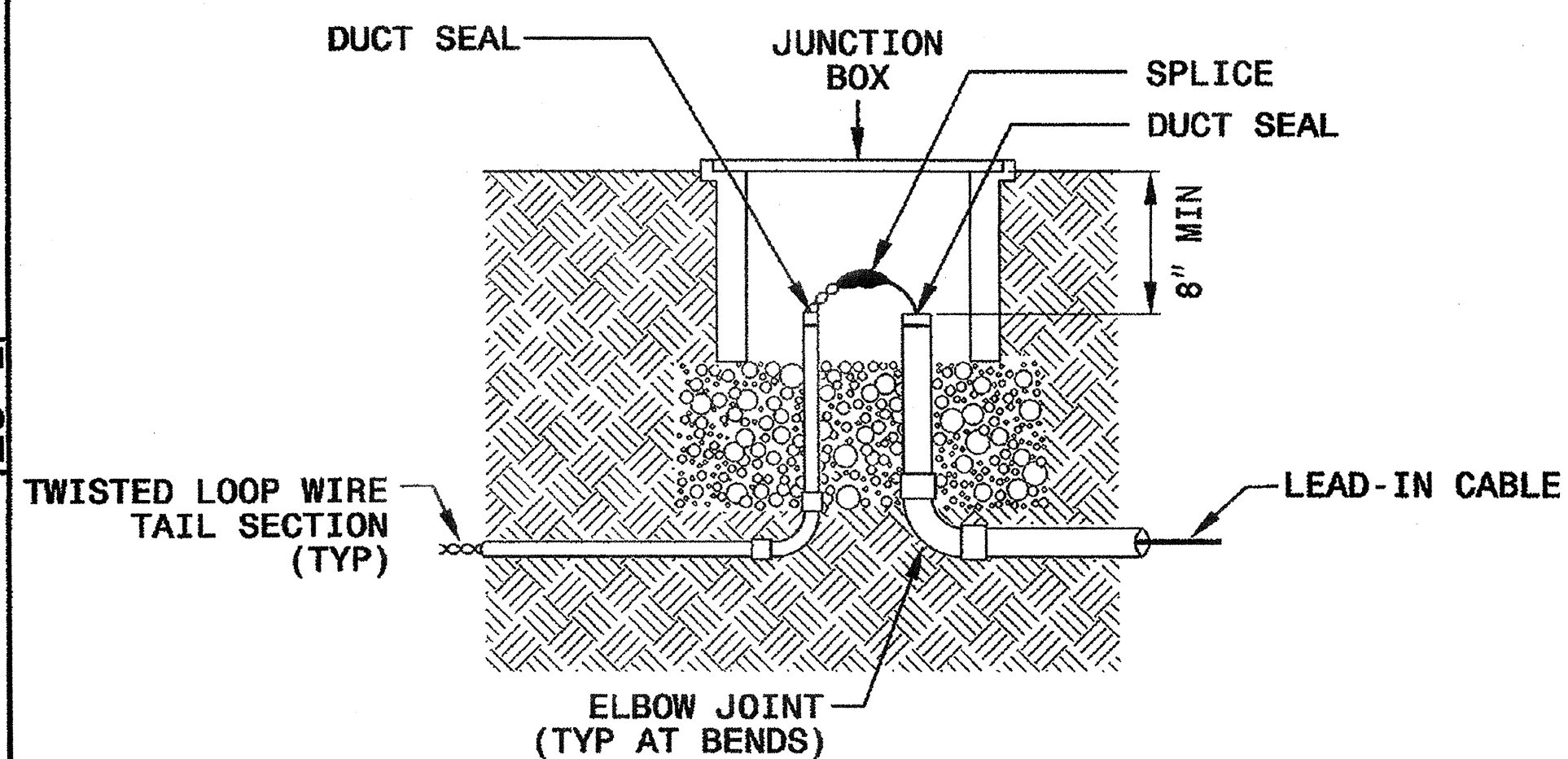
5-07

ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**  
LOOP WIRE DETAILS

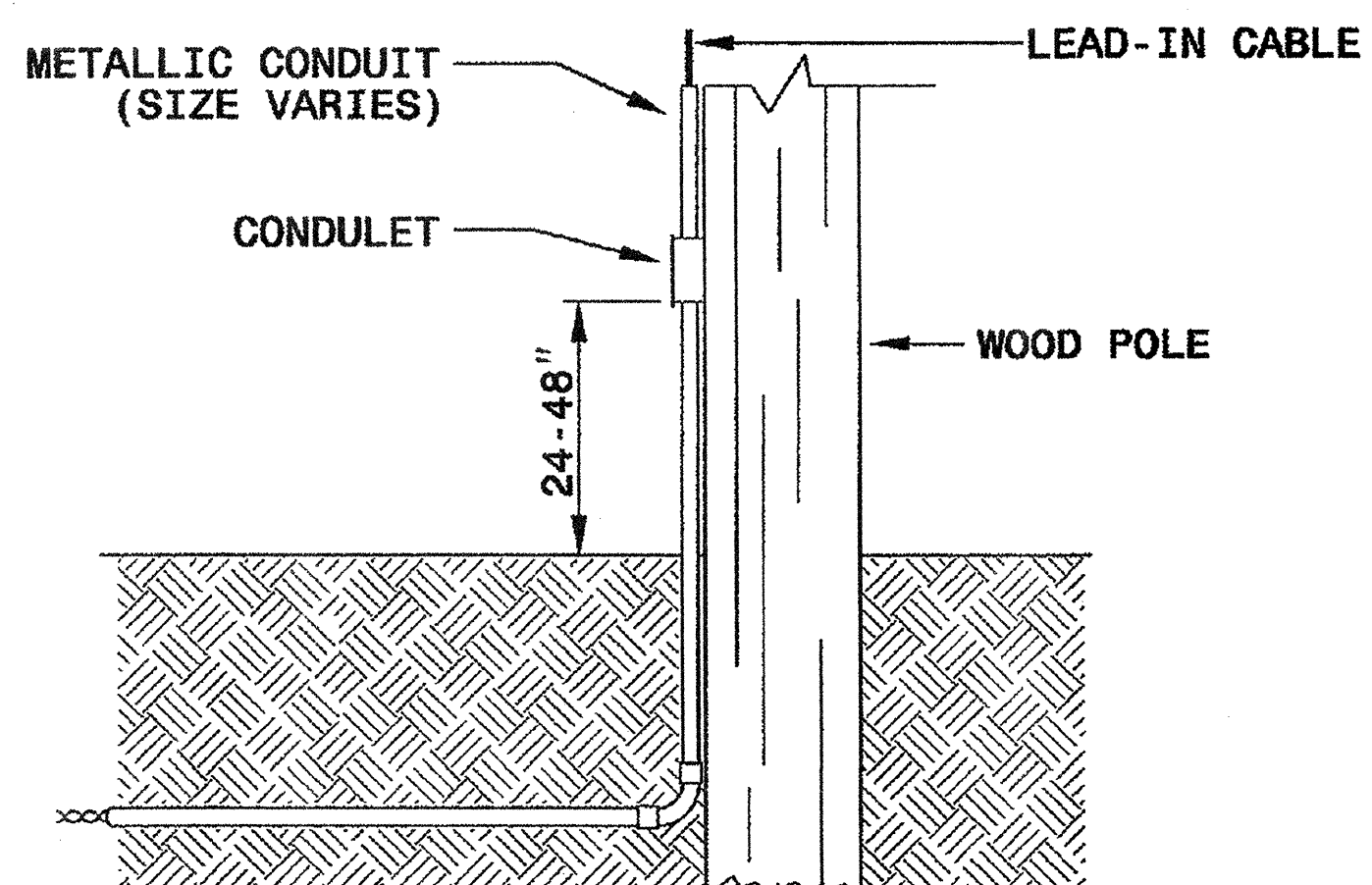
SHEET 2 OF 3  
**1725D01**

**LOOP WIRE SPLICE POINT DETAILS**

**LOOP WIRE AT JUNCTION BOX**



**LOOP WIRE AT POLE**

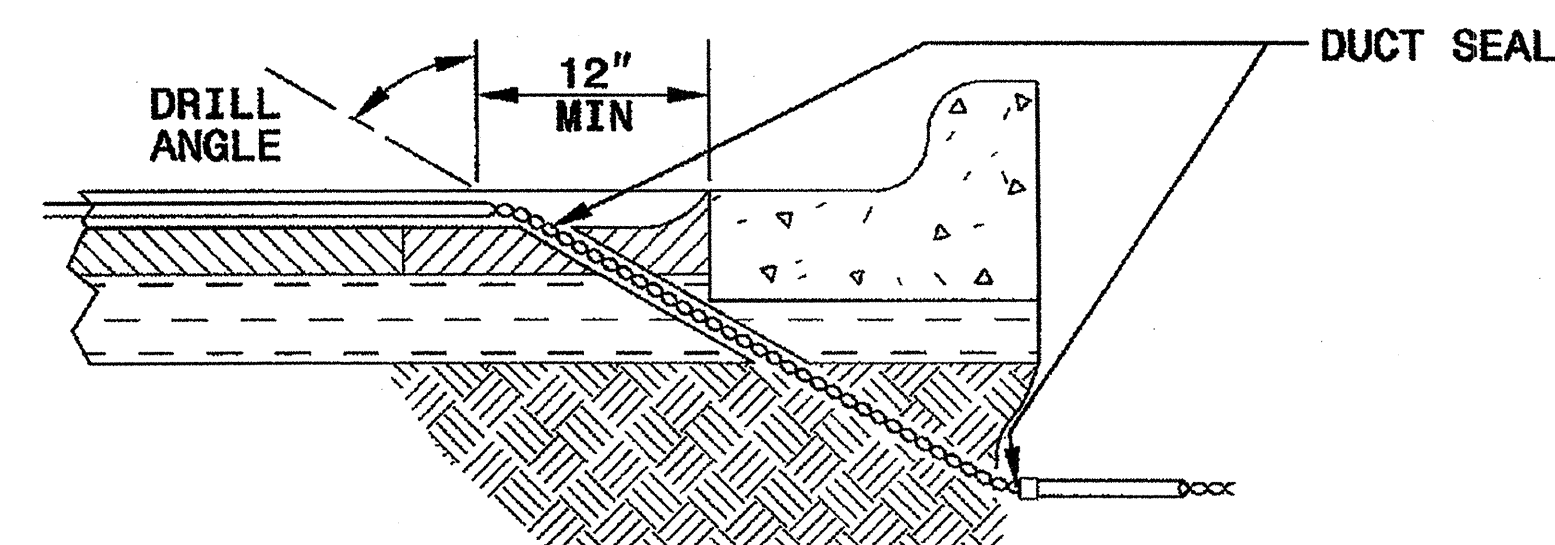


**NOTE**

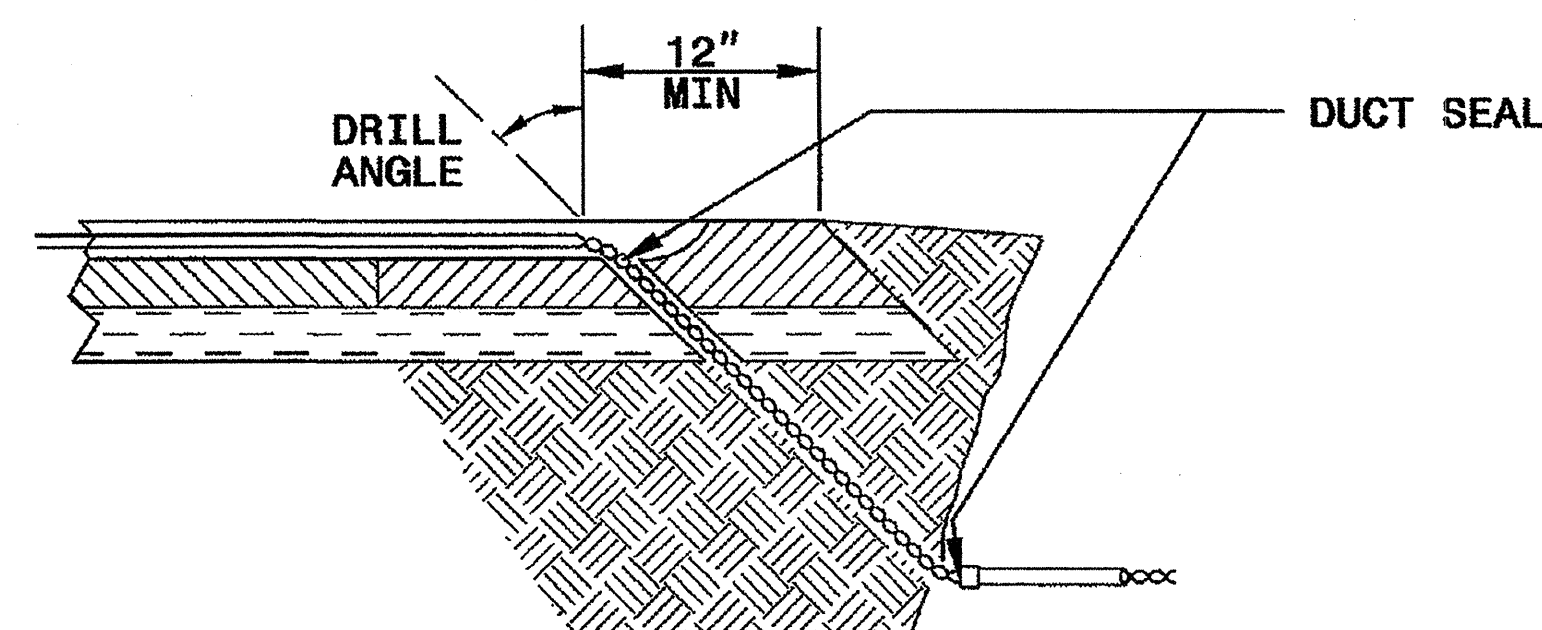
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

**LOOP WIRE PAVEMENT EDGE DETAILS**

**LOOP WIRE AT CURB & GUTTER SECTION**



**LOOP WIRE AT PAVEMENT SECTION**



**NOTES**

1. DO NOT EXCAVATE UNDER CURB AND GUTTER SECTIONS FOR CONDUIT INSTALLATION.
2. TWIST LOOP WIRE TAIL SECTIONS FROM WHERE LOOP WIRE TAIL LEAVES SAW CUT TO JUNCTION BOX, INCLUDING THROUGH CONDUIT.
3. BEFORE SEALING LOOPS, INSTALL DUCT SEAL WHERE LOOP WIRE TAIL SECTION LEAVES SAW CUT IN PAVEMENT AND AT ENTRANCE OF CONDUIT TO JUNCTION BOX.

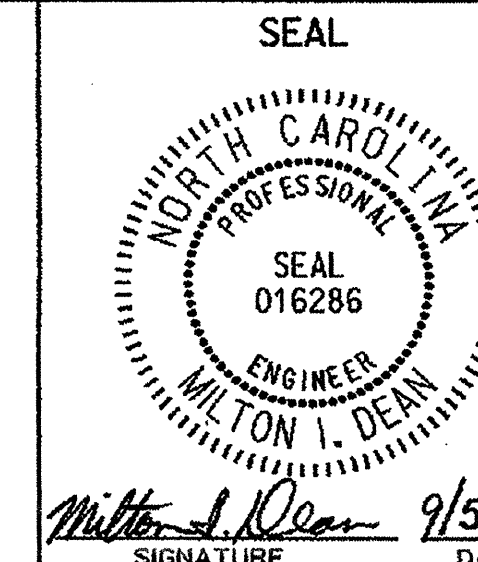
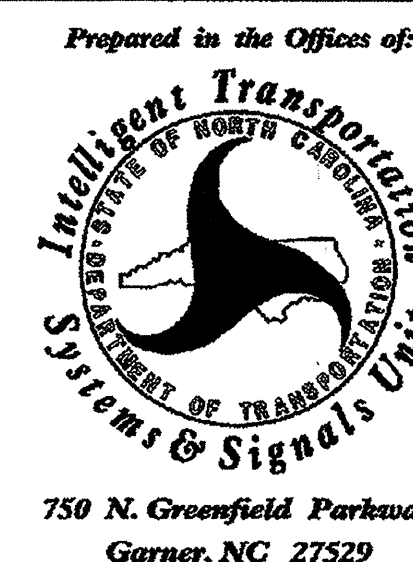
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ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**  
LOOP WIRE DETAILS

SHEET 2 OF 3  
**1725D01**

See Plate for Title



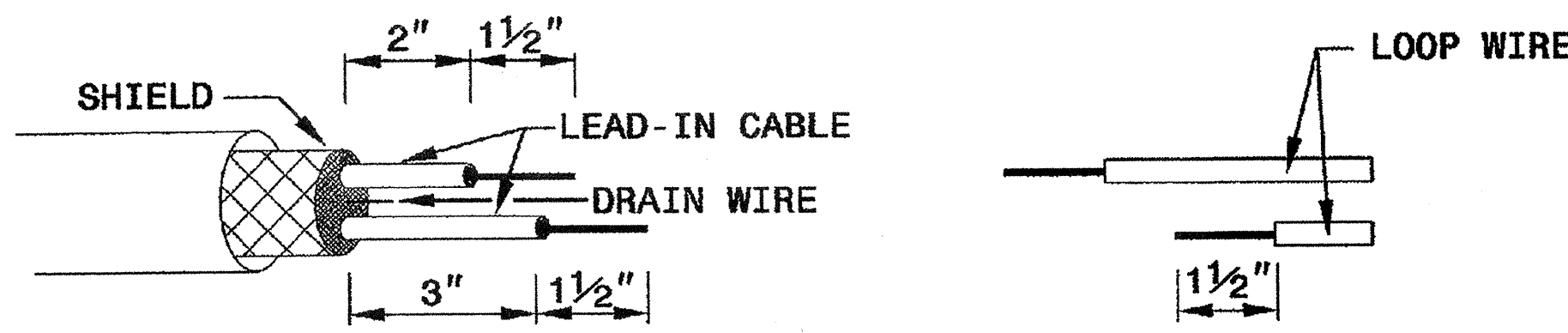


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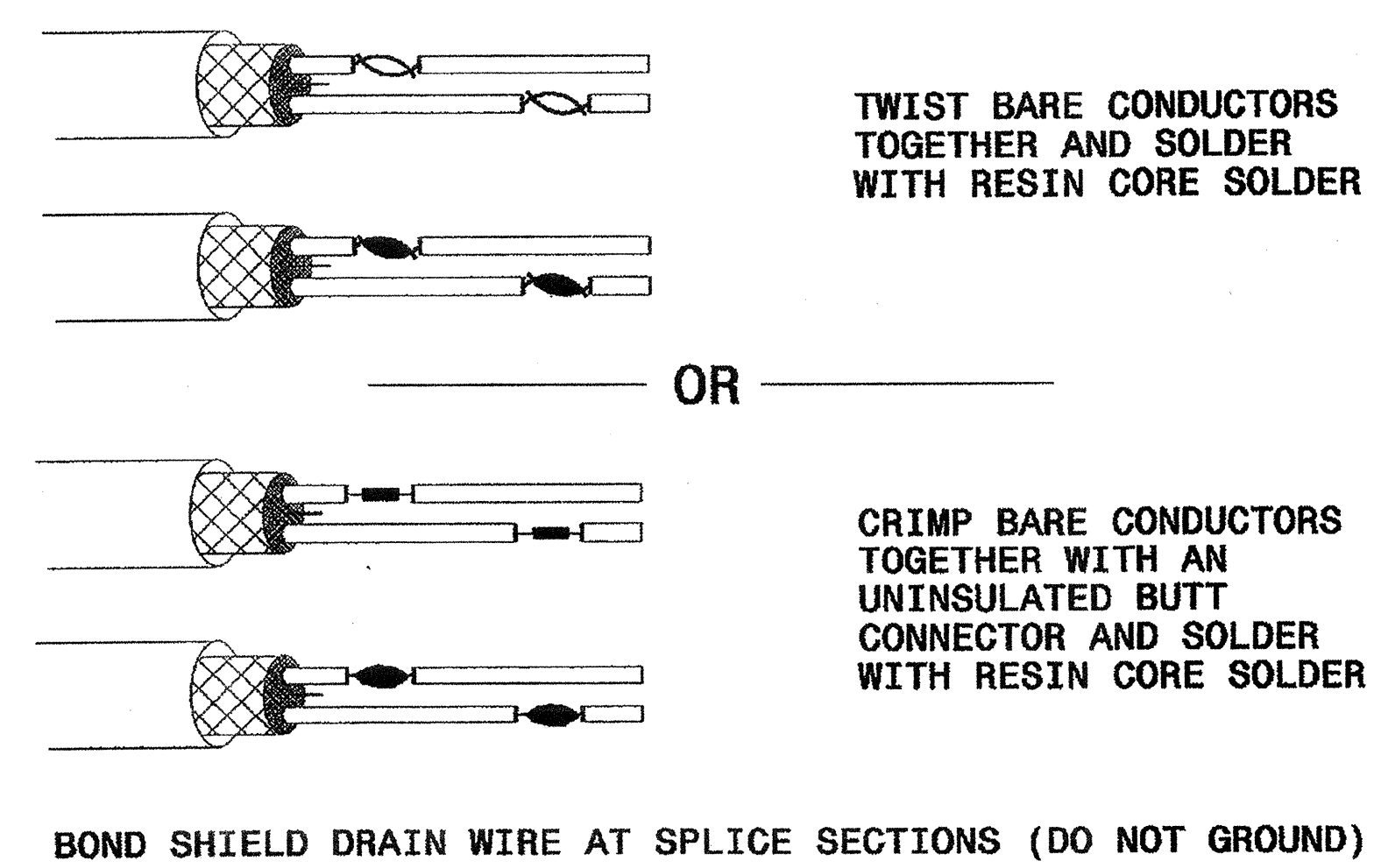
5-07  
ENGLISH DETAIL DRAWING FOR  
**INDUCTION DETECTION LOOPS**  
SPlicing FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3  
**1725D01**

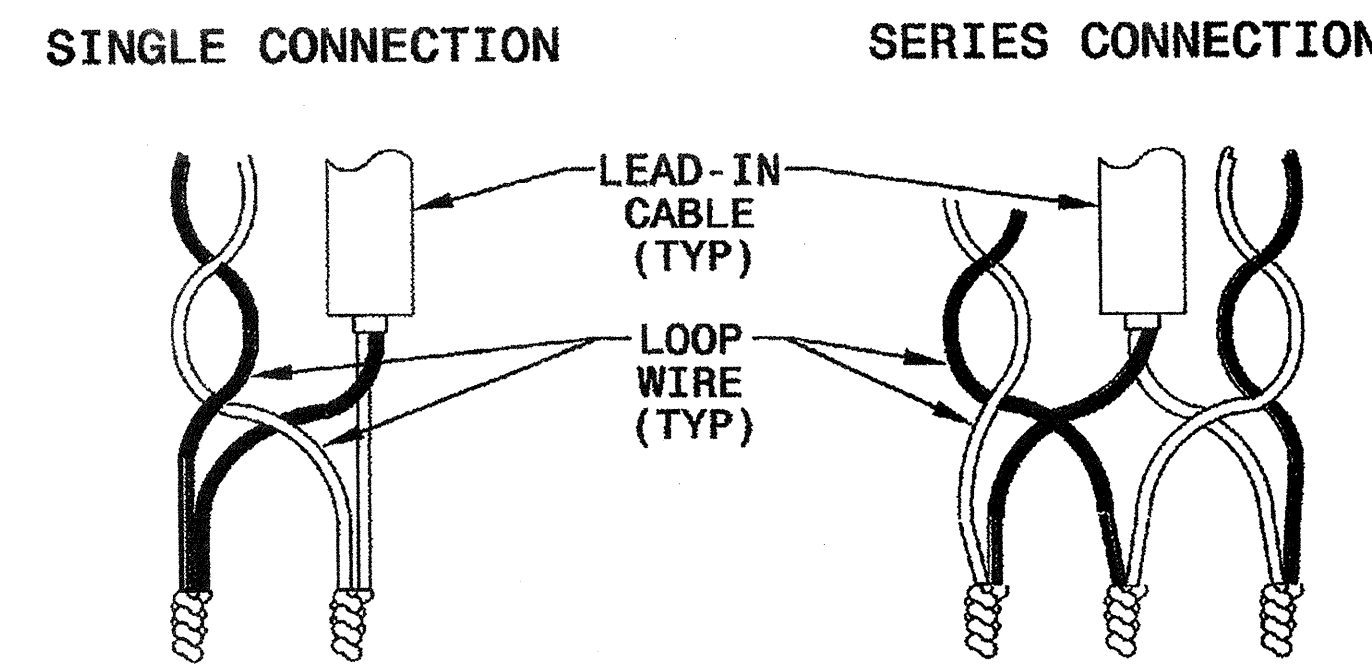
**STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE**



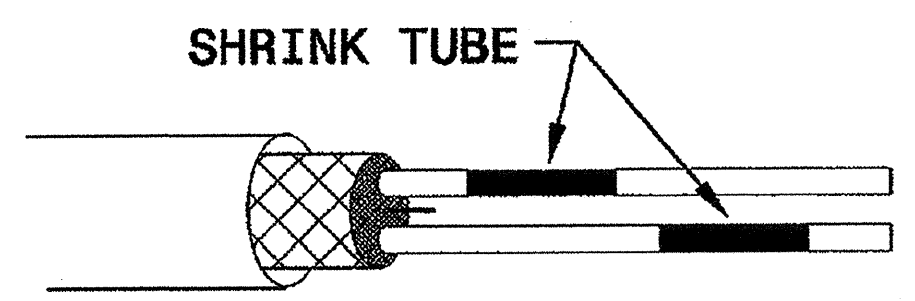
**STEP 2. CONNECT AND SOLDER**



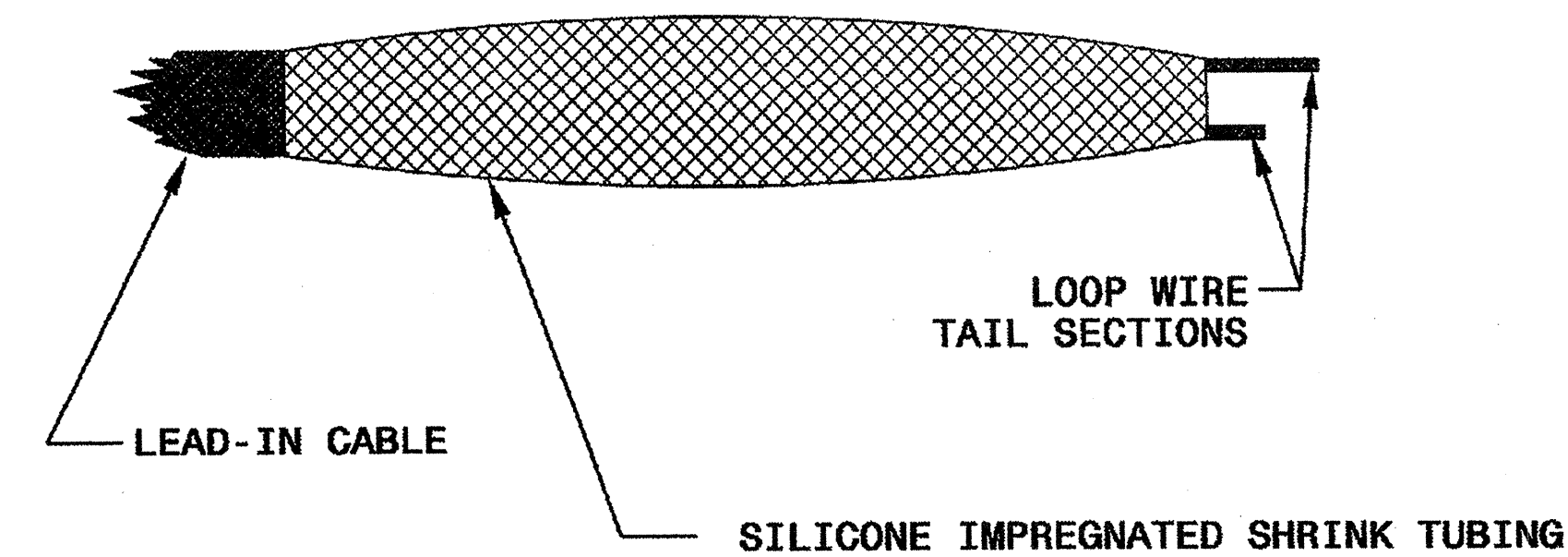
**LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS**



**STEP 3. INSULATE EACH SOLDER JOINT SEPARATELY**



**STEP 4. ENVIRONMENTALLY PROTECT SPLICE**



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ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**  
SPlicing FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3  
**1725D01**

See Plate for Title

Prepared in the Offices of:

750 N. Greenfield Parkway  
Garner, NC 27529

SEAL

ENGINEER  
MILTON I. DEAN

*Milton I. Dean* 9/15/07  
SIGNATURE DATE

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